

AMATEUR RADIO

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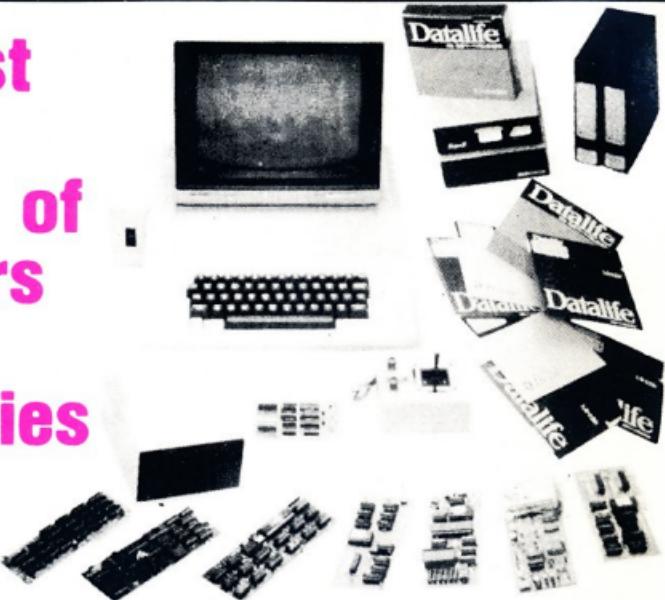
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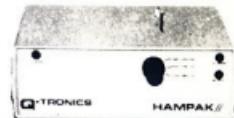
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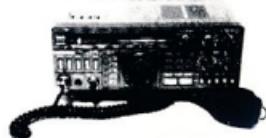


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Late last year ICOM Australia presented VK3 Division of WIA with a IC-RP3010 70 cm repeater for VK3ROU. Full story page 5.

Photograph by Ken McLachlan VK3AH

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EDITOR

GIL SONES*

VK3AUI

TECHNICAL EDITORS

RON COOK*
PETER GAMBLE*
EVAN JARMAN*
BILL RICE*

VK3AFW
VK3YRP
VK3ANI
VK3ABP

CONTRIBUTING EDITORS

MIKE BAZELEY
RON COOK*
REG DWYER
BRENDA EDMONDS
MARSHALL EMM
RON FISHER*
BRUCE HANNAFORD
ROY HARTKOPF*
ROBIN HARWOOD
COLIN HURST
ERIC JAMIESON
MARGARET LOFT
KEN McLACHLAN
LEN PYNTNER*
TONY TREGALE

VK6HD
VK3AFW
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DRAFTING

GEORGE BROOKS
LIZZ KLINE

BUSINESS MANAGER & SECRETARY

REG MACEY

ADVERTISING MANAGER

JOHN J A HILL

*Member of Publications Committee

Enquiries and material to:

The Editor
PO Box 300, Caulfield South Vic. 3162

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Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

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a word from your EDITOR

February brings the John Moyle Memorial Field Day. The Field Day remembers John Moyle who was editor of the magazine now known as "Electronics Australia". John Moyle is remembered for his contributions to amateur radio and shortly before his death he attended a most important international conference — one of the previous WARC conferences.

Field days are more than just a test of our operating skill and logistic capabilities. They allow us to enjoy portable operation and give us an opportunity to practise setting up an effective station in the field. They demonstrate our ability to do so.

Another important thing is that they allow us to bring the public into contact with amateur radio. Many people will stop and look at our operations when stations are set up in picnic areas and on top of mountains.

The curious public may be seeing amateur radio for the first time, answer their questions courteously and present a good image for amateur radio.

For ourselves the field day is a great outdoor activity, stations can be set up in many very interesting places. For truly portable operation why not try one of the very portable rigs and pick a site normally inaccessible to motor transport.

A big score is nice but even a modest score can be quite an achievement. Experiment with locations and equipment — there will be many stations to work. Unusual stations, sites and aerials are all part of the field day.

Even if you cannot afford the whole time you could make a few contacts whilst on a normal family picnic. The main thing is to take part. A hand held VHF transceiver can be taken to some very interesting places.

Above all, join in. Set yourself your own personal goal. A mammoth logistics exercise is not the only way to have a memorable field day.

Gill Sones VK3AUU
EDITOR

AR

PRESIDENTIAL COMMENT

TARIFF BY LAW RE-ESTABLISHED

By now, most members will have heard the news that following submissions to the Department of Trade and Industry, the tariff import by-law covering amateur HF equipment has been re-established.

It has also been back-dated to 29th June 1983.

Further, we have been able to obtain a by-law entry for certain VHF and UHF transceivers. In simple terms, this means a return to the 2% tariff duty on amateur transmitters and transceivers.

All of these achievements have not been without cost, nor heartache, and this new system is NOT as simple on the surface as it first appears.

In previous editorials I mentioned that I would reveal all of the relevant details, as soon as we have been able to conclude new arrangements.

Going back to June 1983, a local manufacturer and retailer, Wagner Industries Pty Ltd, of Sydney NSW, successfully applied to the Government for Tariff protection against the "cheap" importation of amateur transceivers. It was learned that several "converted" amateur transceivers had been openly advertised and sold (illegally!!) to some maritime and commercial users.

Notwithstanding the fact that several popular general coverage amateur transceivers had been converted by an unscrupulous NSW retailer, the WIA was aghast that a pseudo

illegal action in the first instance, could become the basis of a severe tariff on equipment NOT specifically designed to its "illegal" end use, and in particular a tariff against law abiding amateur radio operators.

The WIA has fought hard, and it respects Wagner Industries attempts to protect its own sales structure by whatever means possible.

Wagners manufacture locally, radio equipment designed to explicit specifications for marine and commercial uses. Their equipment is "type approved" for its stated end use, and due to its necessary complexity to comply with those strict specifications, is much more expensive than "comparable" amateur type equipment.

The difference here being of course that the amateur equipment as such, is NOT specifically designed for marine or commercial use, and by the very nature of the service for which it is designed, CANNOT BE TYPE APPROVED FOR USE IN ANY OTHER SERVICE WHATSOEVER.

This therefore is the bone which has been stuck in our throat for all of these past several months.

We have now been able to obtain an agreement between previous tariff applicants and the Customs Department.

The problem in respect of the tariff penalty was the apparent ease of conversion to marine use of certain amateur general coverage transceivers.

Those transceivers were initially set up to operate on the AMATEUR bands only in the transmit mode, but have a general coverage receiver with broad-banded characteristics built in.

The WIA put forward several suggestions, and the one most acceptable to all, confers on the WIA a severe responsibility in determining which equipment can or cannot be capable of operating outside of those frequency bands as specified in Tariff by-law No 85.15 and "without substantial modification" (*).

(*) (By-law 85.15 lists all amateur HF frequencies including WARC bands, also 50-54 MHz, 420-450 MHz and 1215-1300 MHz).

We have noted that another magazine has, in its editorial, attempted to gain credit for itself by insinuating that changes to the by-law were made as a result of their representations — this is totally incorrect, as the errors in the published by-law were detected at the pre-release stage by the WIA.

These errors were brought to the attention of the Customs Department by telex and telephone immediately draft copy was received, which was too late to prevent publication.

In short, the WIA is now able to issue a compliance certificate on imported amateur equipment, to enable retention of the tariff by-law.

Without the by-law entry, a 30% tariff duty will be imposed on all amateur type transmitting equipment.

Several questions now remain to be answered, and the WIA Executive trusts this new arrangement is to the benefit of all concerned, in particular the WIA members, and those importers who have indicated a willingness to stand by the WIA decisions in this first instance.

A major point which was noted very early in negotiations was the possibility of a "conflict of interest" by the WIA, if it were allowed to become the controlling body in determining what is a "substantial modification".

If we are to issue compliance certificates to the industry, we would have to be very careful to ensure that our representatives were above reproach, and stand the test of severe scrutiny.

In this respect, the WIA Executive has employed members who have an engineering background, and who have NO connection in any way with the importing or retailing industry.

These members will actually be employed by the WIA as professionals within their specific field of interest, and will pay them normal commercial rates.

The WIA Executive will accept full responsibility for the decisions of its professional sub-committee.

For obvious reasons, the identities of the sub-committee members will be held in the strictest confidence. All dealings with the committee will be done via the WIA Executive office.

We have been most careful in the selection of personnel for this committee, and members, outside observers and Government representatives are assured that the WIA will accept this new role of responsibility, and ensure that no conflict of interest occurs anywhere in the chain of inspection.

The WIA has been selected for its role in this regard, we intend to ensure we live up to what is expected of us.

The next major problem therefore is to determine what is a "substantial modification".

1. We recognise that any piece of radio equipment can be made to operate on any frequency, providing the person attempting the modification has the correct tools and equipment, and the knowledge of performing same.

As a "yard stick", in this regard, we accept that an amateur of at least ten years standing, would have the necessary experience to analyse circuits and equipment, and perform an actual conversion.

2. Therefore, a "Difficulty Factor" can be determined in

conversions. An experienced amateur as noted above would be expected to relate his efforts directly to the costs of the components required, time and effort. A monetary figure would have to be placed on the time element, therefore commercial costs of repair rates and time would of necessity be applicable in this case.

3. As far as the WIA is concerned, our only requirement is to determine in the "Amateur sense" what a substantial modification is. We are NOT concerned with commercial conversions or sales outside the amateur service. (We cannot stop them anyway!)

A highly experienced professional engineer would no doubt be able to convert any piece of equipment to be used on other bands in a very short time. As we are only responsible to the Amateur Service, only normal amateur type methods will be used by our technical committee in determining a conversion "difficulty factor".

4. The objective therefore is to establish whether or not a conversion by an experienced radio amateur, is able to be performed at a relatively cheaper cost than the payment of the actual tariff duty on the FOB cost of the equipment under consideration. A ratio between these costs can then be determined.

5. The ratio (a "Difficulty Factor Ratio") will enable the WIA to decide whether or not a certain transceiver comes within the scope of the By Law provisions. In this respect only transceivers and transmitters designed for use by the Amateur Service and being imported by a recognised retailer or dealer of amateur equipment, will be eligible for a WIA evaluation. Bona fide travellers bringing equipment into Australia purchased from overseas for their own personal use will also be able to be included in the above. Space requirements prevent me from going into too much further depth, however, I believe I have outlined the major points of the new system, to enable most readers to at least obtain a working understanding of what is required.

Regrettably, this service will NOT be free. The WIA intends to be as fair and flexible as possible in the charges levied for inspections and issue of certificates. Costs are still under consideration as this item is written. As time progresses we will no doubt learn by our mistakes, but we are hopeful the early "bugs" will be few only.

We recognise that a hefty charge by the WIA will have the reverse effect to what we require.

We must not lose sight of whom we owe our prime allegiance to, and that is our own members.

We are not concerned with the commercial scene, only to ensure that proper justice is done, and is seen to be done.

In this regard, the trade generally will benefit, our members will benefit, and we hope that this new authority will have a stabilising effect on piracy, and unscrupulous retailers and suppliers who previously have lined their pockets at the expense of the honest amateur radio operators.

Until such time that the Radio Communications Bill has been proclaimed, (which in part makes it illegal to POSSESS transmitting equipment without the relevant licence or authority), the arrangements as detailed above will remain in effect.

Without it, the current high costs of amateur transmitting equipment will be retained.

We now expect to see a gradual reduction in costs for those items which have been granted a WIA Certificate of By-law Compliance.

Persons desiring to seek a WIA certificate are invited to contact the WIA Federal Office at PO Box 300, South Caulfield, Vic. 3162.

Bruce R. Barthol, VK3UV
FEDERAL PRESIDENT

AIR

VK3ROU Receives New Repeater

Photographs by Ken McLachlan VK3AH

Jim Linton, VK3PC

4 Ansett Crescent, Forest Hills, Vic 3131



Peter VK3ZPP, VK3 repeater co-ordinator, thanks Yoshi VK3BZX for the IC-RP3010 which Yoshi presented on behalf of ICOM Australia.

The first of ICOM's IC-RP3010 70 cm FM repeaters on air in Australia is now serving the greater Melbourne area and beyond under the callsign VK3ROU.

Located near Mt Dandenong, 600 metres above sea level, it's giving a superior service compared with its predecessor at the same site. It has an output of 25 watts into a 9 dB gain G49 Scalar co-linear antenna on a 50 metre tower. The antenna gives the repeater an effective radiated power of 120 watts.

WIA VK3 repeater co-ordinator Peter Mill VK3ZPP said the new repeater had been supplied and would be maintained by ICOM Australia under a special arrangement. He said the new antenna had a 10 degree downward tilt which would result in a "better quality service" in the hilly eastern suburbs and the city area with its buildings.

The earlier VK3ROU, which operated for more than two years, suffered from some signal holes in the eastern suburbs but the new repeater and antenna appears to have virtually eliminated this problem.

The coverage area was approximately to Bacchus Marsh in the west, most of the Mornington Peninsula to the south, across to Drouin with some access also from the Latrobe Valley, and the northern limit is about Kilmore on the Hume Highway.

Reports on the service area of VK3ROU would be most welcome and can be sent to Peter Mill, C/- Wireless Institute, 412 Brunswick Street, Fitzroy 3065.



Yoshi Fukushima VK3BZX, director of ICOM Australia, was very pleased to be able to personally present the new repeater. He said he hoped the repeater would play a part in the encouragement of greater activity of UHF. Yoshi said the IC-RP3010 went into production in Japan in 1983 and has attracted considerable attention from radio societies and repeater groups in several countries.

He said that in Japan there weren't two metre FM repeaters because the band was only 2 MHz wide. Yoshi said 70 cm repeaters were very popular in Japan and UHF was better able to penetrate fixed objects such as buildings than two metres. He said ICOM was confident that, with encouragement, VK operators would make greater use of 70 cm.

Yoshi said the 23 cm band was also popular in Japan and ICOM had begun producing complete repeater stations for that band. The first ICOM 23 cm FM repeater for Australia will serve the Melbourne area in a few months under the callsign VK3RIC.



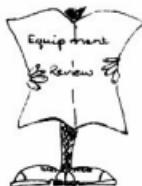
Repeater rack at the VK3 repeater site.

HEAR YE HEAR YE

Have you forgotten to pay your 1984 subs?



This is the last AR for unfinancial members and it may not be possible to send missing copies. Pay now to avoid disappointment.



EQUIPMENT REVIEW

DICK SMITH EXPLORER

Evan Jarman, VK3ANI
TECHNICAL EDITOR

70 CM VHF-FM TRANSCEIVER

This is a very interesting new piece of equipment for, unlike most available today, it is a kit. It requires the odd spare few hours before switching on to build and test, but does give the satisfaction of being home built. It is a big thrill when some replies are received to that first call on a home-brew rig. I know, as all my gear is home made, including a kit.

The unit received, however, was already built and was to be put through the paces. It came through very well.

ON BENCH

Designed for VHF mobile use on 70 cm, it is about the same size as most other mobile gear. The case is plastic and the circuitry, with front and back panels, form a "H" shape enclosed in the case. The speaker was mounted on the case. No mounting bracket was received with the unit but slots on the side showed that this had been thought of.

The unit came without a manual, for at that time it was being prepared, so no specifications were given as to performance. Some specifications were later obtained and the unit tested against these. It complied with these easily, but it should be mentioned that the unit received did not have all the options so power consumption, on receive, was well within the published 340 mA.

ON AIR

On air performance received commendation from all those who heard it. On the receive side the audio was clean and easily equal to all receivers that were compared with it. Sensitivity was good but when compared with others, two were better but one was not. On the only DX tried from Cape Otway (Victoria) to Burnie (Tasmania) it was able to hear and be heard while other gear I had could not get through.

I should mention that all the units that I tested it against are commercially available.

The power of the transmitter, quoted (5 watts), was all that was required for cross city communication. One of the features of 70 cm FM vs 2 m FM is its ability to penetrate buildings; solid communication was possible inside basement car parks, under railway bridges, nearly anywhere. The only thing that managed to stop it was a big mound of dirt. Working simplex from one side of a city to another mobile was nearly always possible in Melbourne. In Adelaide it did not miss a beat.

It was susceptible to some desensitisation when close to other transmitters that were near in frequency. In a test, the receiver was blocked but it required a 20 watt transmitter 10 metres away to do it and only because it was on the next channel.

OPERATING

This radio has the basic controls, volume,



mute channel select and a switch to turn on the repeater off set.

The only control that caused any trouble was the channel select. It is a 40 position switch and gives the channel number by a LED illuminating a perspex cursor on the knob. From the side it looked like a different channel was in use and the back lash in the switch nearly let another channel number over the light. A pair of thumbnail switches could be an alternative.



LOOKING INSIDE

Opening the unit showed the reason why the "S" meter did not work: it was not connected. That is the meter may not have been connected but the light in the meter certainly was, and worked well.

However my greatest disappointment was indeed not a design fault; it was the soldering. It looked as if it had been put together with an enormous iron and an acid pot! Even so, still it worked, and worked well. While a great

improvement can be made by those who are willing to take some care in the construction it does show that it is capable of withstanding a great variety of soldering techniques.

OVERALL

The unit was taken on a couple of trips (Sydney and Adelaide) and worked well. No complaints were received about the "on air" quality of the rig and most were complementary about "home brew" making it onto the band.

Most expressed concern about their ability to construct it but when shown the radio were delighted about how it all fitted together. It showed that the schematic circuit should not be used as a gauge of difficulty in construction.

It is a fine performer compared with other amateur units and as a means to get on the band: value for money.

The unit is sold as a kit of parts by Dick Smith Electronics and well worth consideration.

CONCLUDING

I mentioned that the S meter is not connected. On subsequent investigation it was found that a separate option kit is available for S meter, repeater offset and selectivity. This was not available on the prototype although space is available. Although the repeater off set switch was there it was not used for I was more interested in testing the unit on simplex.

THE EXPERIMENTAL AMATEUR

SATELLITE TRACKING 1

Lindsay Lawless, VK3ANJ
Box 112, Lakes Entrance, Vic 3909



The written information about satellites can be quite frightening to those amateurs not so expert at maths and science. I discovered that several of my friends, who are keen listeners and experimenters in other areas, shy clear of anything to do with satellites, believing that a degree in science and access to a computer is essential before attempting to tune in to the satellite bands. For several months I refrained from most of my usual "skeds" and rag-chewing and spent the time listening to these extraterrestrials. The following discoveries are a result of sporadic listening sessions and careful recording of what and when.

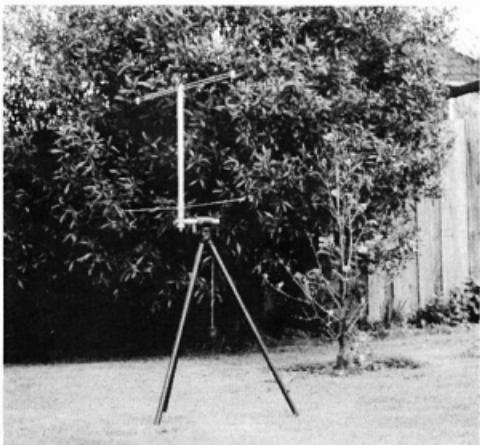
On 10 metres there are six Russian satellites, RS3 to RS8, and the American, Oscar 8 and on 2 metres there is the European UO9. The times to listen for these are as predictable as sunrise and sunset without using more than elementary arithmetic. To illustrate a method

of devising a timetable the following data was recorded from reception of UO9 on 145.825 MHz ± 3.5 kHz.

Using the mean time as the best estimate of closest approach and the records of days with two or more passes the time between passes is 1 hr 33 m to 1 hr 36 m; the average difference for the three days is 1 hr 34.3 m or 94.3 m. Again, using the mean time for the successive days 26/5 and 27/5 it appears that the satellite is in range about 17 or 18 minutes earlier each day; checking back on earlier days the difference over three days is 57 mins and over two days — 39 mins. A better estimate of time of appearance is therefore 19 mins earlier each day. The trick here is to identify similar orbits: I have marked my guesses (a), (b), (c) on the tabulation. Note also that the maximum number of orbits detected is three per day.

Armed with a timetable derived as above you can go on to better things, for example:

DATE 1983	TIME IN UTC	TIME OUT UTC	MEAN TIME UTC	ORBIT TYPE
19/5	0631	0639	0635	(c)
22/5	0705	0712	0709	(b)
24/5	0454	0500	0457	(c)
24/5	0625	0634	0630	(b)
26/5	0547	0555	0551	(b)
26/5	0721	0726	0724	(a)
27/5	0355	0358	0357	(c)
27/5	0529	0536	0533	(b)
27/5	0703	0708	0706	(a)



Two metre, two element beam.

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A TRAP TUNED DIPOLE FOR 80 M AND 40 M BAND

Des Greenham, VK3CO
23 Stewart Street, Seymour, Vic 3660

Most amateurs have some form of beam antenna for the 10, 15 and 20 metre bands and it is often difficult to operate on the 80 m and 40 m bands with the one antenna. A "Long Wire" can be used or a "G5RV" multiband, however both systems require some form of antenna tuning unit to effect an impedance correction to reduce the SWR to an acceptable figure.

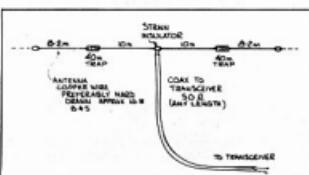


Figure 1: Antenna Construction.

Another approach is to use a "trap tuned" dipole for these two bands (Fig 1). This system is simply a conventional dipole on 40 m with an "electronic switch" bringing in the additional length to form a dipole on 80 m. The electronic switch is a parallel resonant tuned circuit arranged to resonate at 7.200 MHz. At this frequency it presents a very high impedance or "open circuit" to the system, making the antenna a 40 m dipole. At the lower frequency (80 m) of 3.600 MHz, the tuned circuit behaves as an inductance and has the effect of "loading" the antenna causing the overall length to be reduced slightly (see Fig 2).

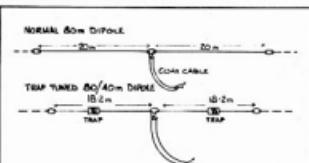


Figure 2: Length Reduction due to Trap Loading.

Commercial traps are available and these usually use air tuning capacitors and are often rated to handle high power up to 2 kW. For general amateur use, where the antenna power is commonly around 200 watts, fixed ceramic capacitors of 5000 volts working or higher, can be used effectively. The traps to be described use this type of capacitor and are easy to construct, the most expensive item being the capacitor. The "trap" is wound on 25 mm (1") diameter electricians PVC conduit. The conduit is cut to 100 mm long with 3/16" holes drilled 6 mm from each end to take the antenna wire. Two holes are accurately drilled 20 mm from each end for the winding of the coil. This makes the coil winding length 60 mm. The wire used is standard 14 gauge B & S enamelled wire.

STAGE 1:

The coil is wound first by measuring approximately 2.5 m of wire and fixing one end to some firm mounting. The workshop vice is very convenient. The wire is then stretched and straightened by running the full length with a piece of cloth. The free end is then placed through the coil hole and bent over. The coil is held tight against the fixed wire and winding commenced. The coil is close-wound and consists of thirty turns. When this number of turns has been wound, the end of the wire should be fed through the former hole without losing coil tension. This is not easy but can be achieved with patience and care.

STAGE 2:

The 56 pF 5000 volt capacitor is now fitted inside the coil with the wire legs fitted through the coil terminating holes. The winding wire ends must be carefully cleaned using a razor blade and/or steel wool. The coil ends and the capacitor tails are now soldered together.

STAGE 3:

Two short lengths of hook-up wire (70 mm) are attached to the coil ends and extended out through the former ends. These are to terminate on the antenna wire (see Fig 3).

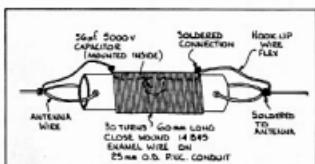


Figure 3: Trap Construction Details (full size).

STAGE 4:

At this stage it is necessary to check the tuning of the resonant traps. This is done most effectively using a "Dip-Meter" or Resonance Meter. If one of these cannot be borrowed, then the normal transmitter can be used to generate a signal to check for resonance. A small loop of hook-up wire (1 turn) is fed from the transmitter using a short length of coaxial cable (see Fig 4). Resonance is checked by placing a small 6 watt fluorescent tube (as used in hand lanterns) near the coil. The transceiver is placed in the "tune" mode on 7.200 MHz and a small amount of RF generated. The final must be

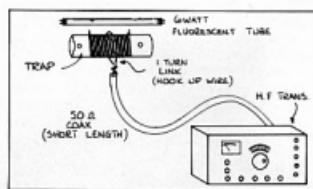


Figure 4: Trap Resonance Check.

tuned to resonance by tuning to plate current minimum (Dip). The drive should be increased slowly and the fluorescent tube should "glow". The drive should be reduced until the glow is slight and then the frequency turned until the glow is maximum. This is the resonant frequency. If the frequency is low, ie under 7.200, the inductance is too high and can be reduced by "spreading" the coil slightly at either end. If the frequency is too high, the coil inductance can be increased by compressing the turns together. If the coil winding directions are carefully followed and the capacitor is correct, the frequency will be very close to 7.200 MHz.

STAGE 5:

After the coil has been adjusted and correct resonance established the entire unit must be waterproofed and sealed. This can be done by total immersion in "Estatol" or similar type varnish. Drain surplus varnish from the assembly and allow to dry thoroughly.

STAGE 6:

The antenna wire can be cut and traps fitted. All connections should be soldered. The antenna dimensions are approximate and should be adjusted to suit the actual location.

The antenna should be checked on 40 m first at 7.200 MHz. If the SWR is acceptable, ie less than 1.5, no further adjustment is necessary. The SWR can be improved if desired, by "cut and try" method on the 40 m length. Be careful to keep adjustments symmetrical ie if 100 mm is cut from one side, then a similar length must be cut from the other side. Check at various points over the band.

STAGE 7:

After the antenna is operating satisfactorily

on 40 m, a check should be made on 80 m. If the SWR is high the "outer" lengths should be adjusted. When this band is correct, then 40 m should be re-checked. If the traps are tuned and working correctly, no variation should occur. A SWR figure better than 1.5 is attainable on both bands.

CONCLUSION:

This is just one simple method of constructing an efficient two band antenna. No extravagant claims are made for this antenna except to say that the performance on both bands is equal to the performance of two separate dipoles.

An additional advantage of this antenna is

the slight reduction in overall length which can be quite an important factor in a suburban block.

The author has used this type of antenna on 80 m and 40 m for many years in the "inverted V" configuration, the apex of the "V" being a mast 15 metres above the ground.

AR

1983 RED CROSS MURRAY RIVER Canoe Marathon

The 1983 Murray River Canoe Marathon — which is run annually between Boxing Day and New Years Eve, was another opportunity for WICEN to participate.

The operators manned control points, riverside check points and boats using 2 and 80 metres throughout the event. This provided a safety network for canoeists competing in the event and was under the control of Peter VK3ANX.

The course is from Yarrawonga to Swan Hill and this year the river level was quite low, creating problems for some of the power boats as one photograph aptly shows.



Photos 1: Sam VK5TZ manning a check point. 2: Steve VK3BHC (L) and Bruce VK3BJZ discussing the day's events. 3: Peter VK3BOD waiting his turn at the Cobram Beach Checkpoint. 4: Keith VK3YQ — off duty. 5: This is what happens to a boat transom when it hits a large snag in the river. 6: Gordon VK3YOD cooling off after a hectic day. 7: Gordon VK3YOD and Alan Thomson about the "Gillfile" pontoon.

SEVENTY TWO PLUS MEMORY CHANNELS FOR THE YAESU FRG7700 RECEIVER

Graham Adams, VK5ZOF
4 Willowie Street, Eden Hills, 5050

I recently read in an English magazine (Radio and Electronics World, June 1983), of a method for converting the memory unit of an FRG7700 to a total of forty channels. The maximum possible is 256. This article describes a simple modification that gives seventy two plus channels instead of the original twelve.

The major change involves adding three small SP ST switches. (Perhaps a small box connected via a plug and socket on the back panel would be the most painless method . . . Ed.) Locate the memory unit and solder four wires to pins 11, 10, 9, 4 of socket/plug JO2/P34 and connect to the switches as shown in Fig 1 (via a new plug/socket combination on the rear panel if so desired . . . Ed.) The colour of the existing wires to the pins are 11 — red, 10 — orange, 9 — yellow, 4 — white. The first three are memory address lines and the fourth is +5V. Switches S1, S2, S3 can be set in a total of eight combinations. This may seem to give 96 channels but three channels are always the same for all banks or combinations. (So we get 8x9+3 or 72+3=75 memory channels . . . Ed.)

always at the same settings, it is simply a matter of removing the memory knob and rotating it so that positions 1, 2, 3 give the common channels. To find the position of the common channels set memories 1 to 12 to 1 to 12 MHz with S1, S2, S3 off. Switch S1 on and look for the common frequencies. When found remove the memory knob and replace in the new position.

If the operation of the three switches seems confusing the alternative circuit given in Figure 2 could be used. A single 3 pole 8 position switch is used to select the different banks of memory. (In this case an external box would seem mandatory . . . Ed.)

Finally if you really need to select all 256 memories bring out all eight address lines from JO2 and connect to two 8 bit counters.

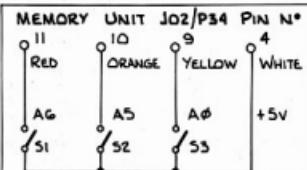


Figure 1 — Memory Channel Bank Selector. The three switches allow selection of eight banks of nine memory channels.

Memory Bank	Switches	Switch Settings
0	S1	Off
1	S1	On
2	S2	Off
3	S2	On
4	S3	Off
5	S3	On
6	S1, S2	Off
7	S1, S2	On

Table 1. Switch settings for Memory Bank selection.

Table 1 shows the different switch positions to select banks 0 to 7. With all switches off, bank 0, which is the original twelve channel group, is selected.

It is convenient if the three channels that are common are set at one end, say memory channels 1, 2, 3 (or 10, 11, 12) for each bank. As these three channels occur at other settings of the twelve channel selector switch then the original 1, 2, 3 positions and are

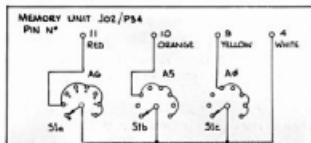


Figure 2 — Alternative Channel Bank Selector. Only one three pole, eight position switch is required to select eight banks of nine memory channels.

(The 12 channel switch may need to be disabled. Also a means of driving the counters up and down as required would be necessary . . . Ed.)

AR

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AMATEUR RADIO EDUCATION ONE CLUB'S EXPERIENCES



This small article is about the efforts of The Illawarra Amateur Radio Society in the field of amateur radio education. The article speaks for itself, however from discussions with amateurs throughout NSW it is obvious that many clubs could do a similar job if they only knew that the facilities could be made available. It was fortunate that this club was able to learn of the possibilities very early in the upsurge of interest in radio following the CB boom.



The Illawarra Amateur Radio Society has, over the last seven years, operated education classes for both the NAOCP and AOCOP with what we consider to be great success. From discussions we have had with amateurs from other areas, we understand that these successes have been achieved much more easily than has been able to be achieved in other areas, not because of more ability on the part of the lecturers (though in some cases this was the case), but because the facilities made available have been of a higher quality.

This being the case, we have tried to set out below the history of our amateur radio classes and how we have been able to achieve what we feel is a good record.

Initially, we had the good fortune to have a Technical College teacher and a High School teacher in our club. Both of these gentlemen were interested in teaching a suitable course and arrangements were made to teach a Basic Electronics class as an elective subject for the Higher School Certificate at the local Technical College in the School of General Studies. The course was structured in such a way that the curriculum in Stage 1 covered the requirements for the Novice licence and Stage 2 covered the AOCOP. With various career changes these lecturers left the district and others took their place. Two years ago the course was changed from a basic electronics course to a specific Two Way Radio course administered by the School of Applied Electricity (Electronics) and is structured as follows:

1) **TWO-WAY RADIO USERS.** This is a twelve week course and is designed for the beginner and takes the student through basic concepts, antennae and equipment and good procedure. The course is an excellent introduction to the casual user of two-way radio, especially operators in the CBRS, commercial land-mobile service, State Emergency Services, Volunteer Coast Guard etc. Many of the students have sat for and passed the 3rd Class Radiotelephone Operators Certificate (ROCP).

2) **TECHNICAL PRINCIPLES OF TWO-WAY RADIO.** Stages 1 and 2 covers the curriculum for the NAOCP including 5 WPM Continental Code No 2. Stages 3 and 4 includes all the requirements for the AOCOP including 10 WPM telegraphy. Stage 5 is entitled Workshop Practices and is a very popular course and is always overbooked and has a waiting list of

local amateurs. This course begins by teaching fundamental workshop practices such as soldering, the making of printed circuit boards, metal bending/folding, marking-out, drilling etc. After these basic skills are taught then the student is encouraged to undertake tasks in line with his improving skills. (This has been an excellent way for local amateurs to put aside three hours a week for homebrewing.)

All of these classes have been well attended each year and the success rate has been continually high at the appropriate examination.

So far this seems to be pretty much the same as lots of other amateur classes, but there is a fundamental difference. Firstly all students have access to all types of test and operating equipment. Secondly the outlay for the students is \$5 (which is the college student's union fee) plus any materials they wish to use. Thirdly, the teachers are paid as part-time teachers. In addition to this the students and the teachers are well received at the college and made to feel part of the establishment. All of the lecturers have nothing but praise for the teaching and technical staff and the help they have given us, especially when most of the current lecturers had had no previous teaching experience.

Facilities include, apart from the usual teaching paraphernalia, a Kenwood 520 receiver, a JRC solid state transmitter and various antennae. A number of the teaching staff and technical staff now have gained their licences as well and it is hoped that a Radio Club will be started at the college in the near future.

As far as our club is concerned we have certainly derived a great deal of benefit from the courses. In the period since the classes have commenced our membership has grown from about twenty five to about one hundred. Something in the order of seventy five percent of our members are "graduates from the Tech" and many of these, as in other clubs, were originally operators in the CBRS. One of the major advantages of the courses has been the fact that our ex-students have been introduced to the pleasures of "homebrewing" as a part of their instruction. Novice students get the opportunity to build (and to fault find, if necessary), an 80 metre direct conversion receiver, a two transistor transmitter using a 3.579 MHz colour burst crystal, a GDO and an

Keith Curle, VK2OB
24 Beach Drive, Woonona, NSW 2517
Denis McKay, VK2DMR
17 Doncaster Street, Corrima, NSW 2518

impedance bridge. As a result we have a very large group of homebrewers. At least twenty kits of the Dick Smith "Explorer" 70 cm transceiver have been built in the district and the fact that the club has four repeaters is due to the high level of activity in the area, much of which is due, we feel, to the interest encouraged by all of the course lecturers.

So, if your club has a yen to start a Novice or AOCOP class or you already have one running you might like to talk to your local TAFE college. If our experience can be relied upon, you could get a great deal of help.

The Illawarra Amateur Radio Society and the authors would like to thank publicly the following for their help over the years:

John Shaw, Head Teacher, School of General Studies, Alan Gosnell, Department Head (Electronics) School of Applied Electricity, Bill Nunn, (waiting for his callsign), teacher, Department of Electronics, John Byatt (VK2ECP) — Technical Officer, Charlie Hartley (VK2KCH) — Technical Officer, Greg Nance — Knievel — Technical Officer, the following lecturers: Bob Wootton, Bruce Carroll VK2DEQ, Brian Wade VK2AXI, Jim Potts VK2BGB, Jim Giblin VK2BOU, Ned McIntosh VK2AGV and Dale Hughes VK2DSH, and all of the teachers and staff at the Wollongong College of Technical and Further Education.

AR

AMATEUR GET-TOGETHER



L to R: Len VK3NPG, Gordon VK4AGM, Geoff VK4VLI and Sylvia VK4VST enjoy an eyeball QSO at Geoff's Victoria Point, Q, QTH.



INTERNATIONAL NEWS

BRUNEI INDEPENDENCE CELEBRATIONS

Brunei became independent on 1st January 1984. To celebrate the event BARTS will be operating special event callsigns VSS1, VSS1B, VSS1C from 0001 UTC 24th February 1984 to 2359 UTC 26th February 1984. Frequencies used will be as follows ± QRM: —

SSB	CW
3.795	3.505
7.085	7.005
14.205	14.005
21.285, 21.185	21.005
28.505	28.005

Commemorative QSL cards will be printed.

BRUNEI INDEPENDENCE CELEBRATION AWARD

This award is available to licenced operators and SWLs. Applicants must submit certified log entries with time in UTC. To qualify for the award, applicants must make contact with one of the Special Event Stations, i.e. VSS1, VSS1B, VSS1C; plus: — One contact with another VS5 station in 1984 for applicants in IARU Regions 1 and 2. For applicants in IARU Region 3, three contacts in 1984 with other VS5 stations are required.

Cost of the award to cover postage is \$2 US or 6 IRCs.

Address all entries and QSL to: — VS5 — BARTS, Box 222, Bandar Seri Begawan, Brunei.

AMATEUR RADIO POSTAGE STAMP ISSUED BY SOLOMON ISLANDS

A postage stamp featuring amateur radio was issued by Solomon Islands as part of their World Communications Year set released on 19th December 1983.

The stamp, featuring the Solomon Islands Radio Society amateur station, callsign H44SI, is available on a special commemorative cover. The price of the cover is \$US1.00, 5 IRCs or equivalent, including postage.

The complete World Communications Year set of three covers featuring a total of six stamps is also available at a cost of \$US6.00 or equivalent including postage.

All orders should be forwarded to: Solomon Islands Radio Society, PO Box 81, Honiara, Solomon Islands.

AR

NEWS FROM INDIA

During the three months January, February and March 1984, a station with commemorative callsign ATOA will be operative from Antarctica. QSL info via VU2IF Dr Arshutosh Singh DXCC, PO Box 4015, New Delhi-017, India. Presently Ashu VU2IF is on board the ship "Fin POLARIS" callsign OIGW, and operating as VU2IF/MM on SSB around 14.150 MHz.

Permission to operate a commemorative callsign VU7WCY during December 1983 from the Laccadives was granted by Indian authorities applicable to any VU station.

1984 INTERNATIONAL VHF/UHF CONFERENCE

The 1984 Dayton Hamvention's International VHF/UHF Conference will be held concurrently with the Hamvention on Friday, 27th April through Sunday, 29th April. Activities will include:

- Numerous informational and entertaining Technical Forums presented by acknowledged experts.
- Noise Figure and Dynamic Range Measurement Contests for 144-2304 MHz with certificates awarded in Commercial and Homebrew categories, and prizes for the Homebrew winners.
- Antenna Range Measurement Contest for 144, 220, 432 and 1296 MHz with certificates awarded for Maximum Gain and Best Figure of Merit, and prizes for the Homebrew winners. (Good weather assured by Murphy).
- Hospitality Suite with refreshments, cash bar, and door prizes.

Plus all the regular activities of the Dayton Hamvention. New improved facilities this year include new soundproof forum rooms with integral A/V systems, more exhibitor space, and a larger three day flea market.

International attendees are urged to make lodging, travel, and local transportation arrangements as soon as possible to ensure availability.

Technical papers and presentations on VHF/UHF topics of interest are being solicited for consideration. Potential speakers should submit their requests immediately. For further information, contact: Jim Stitt WABONQ, VHF/UHF Conference Moderator, 4126 Crest Manor, Hamilton, Ohio 45011, USA.

AR

OSCAR-10 LINKS ITU MALAYSIA SEMINAR WITH THE WORLD

It's not often that amateur radio can get on stage with professional telecommunications people. Yet this happened at the seminar held by the ITU in Kuala Lumpur — capital city of Malaysia — from the 5th to the 9th December, 1983. Two other seminars, to mark World Communication Year, had been held earlier in the year by the International Telecommunication Union — one for the Americas and the other for Africa; the December seminar was for the Asia-Pacific region. ITU's major aim in World Communication Year has been to stress the importance of telecommunications in all its forms for the social and economic development of Third World countries.

Venue for the seminar was the Kuala Lumpur Hilton. At the back of the Technical Sessions room on the topmost floor stood a small table with a collection of amateur radio equipment — cables draping their way to the hotel roof. It was amateur radio station 9M2CR — hurriedly transplanted from its normal location in Port Dickson, 100 km away, by a group of enthusiastic Malaysian amateurs. The biggest problem was shifting the entire antenna system complete with Az-

El rotators and finding a safe place to locate it on the Hilton roof. Everything had to be done on the Sunday before the seminar opening day — but Sunday's window on Orbit 357 had long since closed by the time all the gear was put together. No system checks could be made until next morning.

Not surprisingly there was some anxiety when the station was switched on at 0100 UTC on Monday morning. The answer came at 0102 when VK5ZTS in Adelaide came back with a 5.3 report (respectable enough for QRP-day) — the system worked! The station boasted the callsign 9M2CR/WCY for the occasion — but Colin (9M2CR) could only operate during breaks in the technical sessions and then only for two short days. Yet it put Malaysia on the satellite map on a very special occasion, with QSOs ranging from KL7GNG in Alaska to VK6KJ in the extreme south-west of Australia, not to mention JH7LGJ in Yagi Prefecture — a significant name for radio amateurs. It brought amateur radio satellites and in particular OSCAR-10 to the notice of the professionals and showed what could be done with limited resources and low power. Highlight of the event was undoubtedly the visit to the station by Mr Richard E Butler, Secretary-General of the ITU, who donned a second set of headphones and listened-in to OSCAR-10. In the picture are 9M2AP and 9M2RS — willing helpers.



The ten-turn chopstick helical.

It was perhaps appropriate that the Uplink antenna on 435 MHz was the Ten-turn Chopstick Helical, designed and built by 9M2CR, and now modified with a "close-approach" first turn to give an SWR of 1:1 with 50-ohm feeder cable. The helix is formed with ordinary RG58 coaxial cable, wound around chopsticks as supports on a timber boom. The reflector is aluminium mosquito-mesh, stretched across a bicycle wheel. An inexpensive way of getting 14 dBi gain and RHC polarisation at the same time! And an instance of alternative technology keeping pace with the satellite era.

Colin Richards 9M2CR (one-time Project Manager with ITU)

AR

CLUB



CORNER

REDCLIFFE RADIO CLUB

Jack Grubb VK4IZ, past president was recently presented with an engraved Life Membership plaque.

During his amateur life Jack has held the callsigns VK3IZ, VK6IZ and now VK4IZ.



Club President Ian VK4NMS presents Jack with his plaque.

TOWNSVILLE AMATEUR RADIO CLUB — 1983

The past twelve months of TARC has been a very active period. Perhaps it was the festivity of the Commonwealth Games that started the year or the highly successful North Queensland Convention towards the end of the year, or was it the fact that this year was World Communications Year. It has been another successful year for the Club.

Membership has remained stable, the monthly general meetings have been well attended, guest lecturers have been well received, the computer group has been a high interest addition this year, and of course the monthly magazine "Backscatter" has been of the usual high quality.

The Club equipment has always been ready for Field Days, Contests and WICEN activities. The 2 m Repeater and the 6 m Beacon have operated continuously, and the 10 m Beacon is almost ready for testing.

Some significant activities of TARC this year include the opening of the Vern Kerr Memorial Display at Charters Towers, the North Queensland Convention, the ALARA Trophy, the Education Seminar that may be the start of further growth of Novices in the Club, and the large number of JOTA stations operated by Club Members.

1983 was a year in which some dear friends,

particularly Len Dodds VK4GD, became silent keys.

LIFE MEMBERSHIP AWARDED TO EVELYN BAHR (VK4EO)

The Townsville Amateur Radio Club has presented Evelyn Bahr VK4EQ with Life Membership of the Club in recognition of her outstanding services to amateur radio.

The presentation was made at the Club's end-of-year function by Alan Stephenson VK4PS, who related how Evelyn obtained her Amateur Operator's licence in the mid-1950s. She became the first ever female member of the Townsville Amateur Radio Club, and has remained an active Club member ever since.

One of her first official positions was as Club Treasurer during 1974. She then took over as co-editor of the Club magazine "Backscatter" in March 1975. Soon after, Evelyn took over full editorial responsibility, and has continued in the position until the present day.

She has been net co-ordinator for the Club station VK4WIT for the Sunday evening news broadcasts throughout North Queensland for a number of years, and also participates in the activities of the Wireless Institute Civil Emergency Network. These began with membership of a Club WICEN committee in 1972.

Evelyn regularly helps out with the Jambooree on the Air, with Field Days, and with SES exercises. For a number of years she was a very high scorer in the Australia-wide Remembrance Day Contest.

As unofficial "Social Convenor" for many years, Evelyn organised outings and barbecues. She was also the Club's "arm twister" for rosters at various displays.

She has acted as an ambassador for the Club and the Wireless Institute of Australia for many years, and is well known on the amateur bands throughout Australia for her happy outlook on life.

Peter Renton, VK4PV
PUBLICITY OFFICER, TOWNSVILLE ARC

WARRNAMBOOL ARC

On 23rd October, 1983, the Warrnambool Amateur Radio Club was invited to erect a display of communication equipment at Flagstaff Hill, Warrnambool Maritime Village.

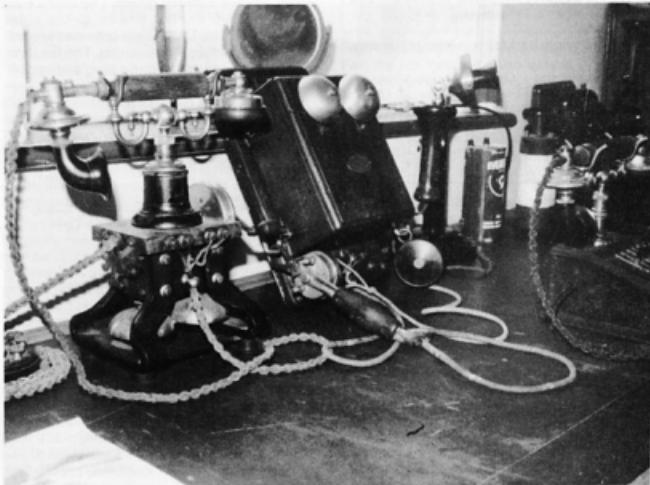
The club displayed a heliograph, telephone, early radio through to operational modern day amateur radio, and were active on both HF and VHF.

Over 2000 people visited the display.

R Smith VK3BFF
PUBLICITY OFFICER



L to R: Colin VK3DRF and Mark VK3XTL demonstrate the amateur equipment.



Some of the old time display.

Photos by Keith VK3ASS



NOVICE NOTES

Ron Cook, VK3AFW
TECHNICAL EDITOR

INVISIBLE ANTENNAS

If you live in an apartment, attic, garret, flat, rented house or in a suburb where antennas are banned, or at least not considered at all favourably then here are some suggestions. The amateur with the largest masts supporting the largest antenna will always outperform any other set-up. The antenna that must be unobtrusive or at least not look like an antenna will inevitably be a compromise. All the same any signal is better than none at all. The antennas described here should be capable of giving a good account of themselves and will generally be better than a good mobile arrangement. WAC can be within your grasp.

IT'S ONLY A TV ANTENNA

The first candidate for this is a two element 10 m beam. See Fig 1(a). Unfortunately it looks like some CB beams so, unless you can get it well up in the air where it looks smaller, it might be a no-no.

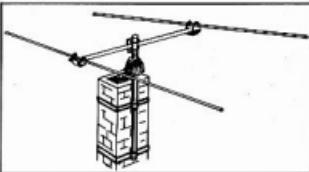


Fig 1(a). A chimney mounted 10 m beam can be passed off as a TV antenna.

TABLE 1. Dimensions for two element beams.

Frequency (MHz)	Element Diameter (mm)	Driven Element (m)	Director (m)	Spacing (m)
28.50	38	5.03	4.66	1.27
28.50	25	4.99	4.61	1.27
21.15	25	6.84	6.45	1.70

The dimensions given in Table 1 are derived from Ref 1. The rotator should be mounted close to the top of the chimney on a TV type mount. A short stub mast will allow the beam to be placed immediately on top of the rotator. Increasing either mast by a few hundred millimetres considerably increases the risk of damaging the chimney during stormy weather.

Figs 1(b) and 1(c) show how the elements could be fitted to the boom. (Based on diagrams in Ref 2.)

The feed resistance will be about 30 ohms so 50 ohms coax can be connected to the driven element via a 1:1 balun.

The elements can be shortened by many methods (see Ref 3) but this will destroy the TV aerial appearance.

An arrangement I have used in an elevated

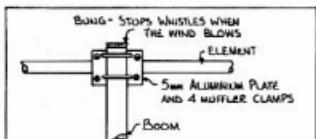


Fig 1(b). Mounting method for director-to-boom for boom-to-mast.

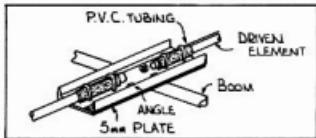


Fig 1(c). Driven element mounting.

flat is shown in Fig 2. The feeder to the communal TV antenna had broken but the owner would not pay for its repair. Having said (truthfully) that the TV reception was unacceptable and if no objection was made I would erect my own small aerial on the balcony. As this cost the owner nothing and would apparently keep me quiet he agreed. (The roof was not readily accessible otherwise other arrangements could have been made.)

The mast was about four metres long and mounted on two stand-off insulators fitted to a well painted wooden board. The board was fixed with two muffler clamps to the steel balcony rail. The TV antenna provided top hat capacity as well as TV reception. The feedline was run down the mast and a plug and socket fitted at the base to allow either TV viewing or HF transmitting.

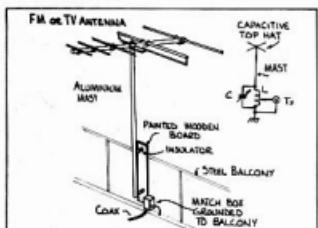


Fig 2. Balcony mounted vertical.

As the flat was on the third floor a good earth was a bit difficult. I made do with the balcony railing by removing some paint and clamping a wire to it. A dab of fresh paint was added to stop rust. I used a plug-in set of LC networks to match the vertical on 20, 15 and 10 m.

With about thirty watts some good contacts

were had around VK and the Pacific. Sunspots were at a premium and DX was scarce at the time.

A tapped tuned circuit would enable operation on 80 m where good results should be possible.

I had no reported TVI and no complaints about the aerial. TV reception was fine too.

I WONDER WHERE THE WIRE WENT

Some people suggest using a thin wire antenna in situations where antennas are frowned upon. (Ref 4.) I have spent more time repairing broken wires than using them. Small children readily find the ends of "invisible" antennas. (Snap!) Tradesmen with tall ladders visit at least once a week. They never see the antenna but always walk past with the ladder upright. (Snap!)

The only satisfactory solution is to get the antenna up into the roof space under a tiled roof. See Fig 3. Be careful not to have wires anywhere but close to wooden beams, rafters etc. Otherwise a tradesman might attempt to strangle himself on your radiator. (Big problems will follow.)

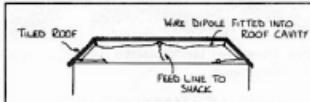


Fig 3. Under-roof invisible antenna.

The bonus is that the antenna is reasonably high. When it rains efficiency does fall a bit, but not drastically. Unfortunately you need access to the top floor of an older style flat (modern construction tends toward flat metal roofs). More than one dipole can be connected in parallel. The ends can be bent to fit into the space available.

I managed dipoles for 80, 40/15 and 20 m. Contacts with W-land were quite possible on all these bands, again during a sunspot minimum.

An alternative scheme that I have used for SWL listening is a wire suspended beneath the eaves. For transmitting purposes best results can be obtained if the guttering is plastic. (See Fig 4(a).) TV stand-offs will support a wide range of wires. TV ribbon could be used to make a parallel-connected multi-band dipole by cutting a notch through one wire as shown in Fig 4(b).

If all else fails a short (7.5 m or 25 ft) length of wire can be strung up inside a room or up under the tiled roof of a garage and driven against a cold water pipe or a 2 m stake driven into the ground. I have tried the garage roof scheme on the five main HF bands with an FT7. Signals around VK and the Pacific were 6 to 20 dB down on a dipole at 12 m (40 ft). An ATU is necessary of course.

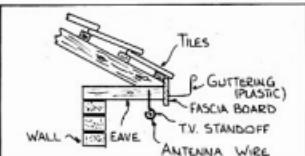


Fig 4(a). Under-eave invisible wire antenna.

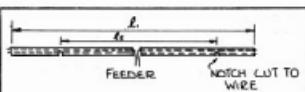


Fig 4(b). Cutting of 300 ohm TV ribbon to make a multi-band dipole. $l = 0.143/f$ (MHz) metres.

LAUNCH A SIGNAL WITH A LOOP

In Ref 5, Pat Hawker describes two loops developed for military operations. The first is an octagon with 5 ft long sides and is claimed to be as useful as a dipole. I have heard a claim that loops are magnetic field radiators whereas verticals and dipoles are electric field radiators. Loops are therefore less affected by nearby vegetation and other conductors.

This argument therefore concludes that loops are more efficient than other antennas of similar size when placed low to the ground in adverse locations such as in a jungle or your backyard. A loop can be mounted within one metre off the ground and can be attached to a wall of a building. It can thus be the basis for an unobtrusive antenna.

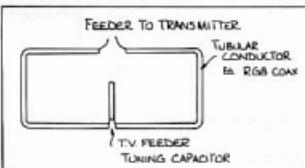


Fig 5. Wall mounting vertical loop for lower frequencies. Suggested circumference 21 m (60 ft) for 80 m. The sides should be 2 to 3 m.

Fig 5 shows a design based on the second loop design in Ref 5 which is in turn derived from the octagonal one.

A wall at least seven metres long and two metres high is required for 80 m operation. A loop is made from RG8 coax. The braid is used as the conductor and a feedline connected the break at the top of the loop as shown. For initial tests, a two turn one centimetre diameter coil could be used to couple to a dip oscillator.

Check the resonant frequency with the loop open at the bottom. It will be perhaps as high as 15 MHz. Add say seven metres of 300 ohm TV ribbon across the bottom and check the new resonance. If it is less than 3.5 MHz prune off a little ribbon and measure the resonant frequency again. Keep trimming until the correct resonant frequency is obtained. More than one piece of ribbon can be placed in parallel to give extra capacitance without extra length. Add more ribbon to lower the frequency.

The VSWR should be less than 2:1 over up to ± 50 kHz from resonance. If the VSWR is too high at resonance an ATU should be used.

Another loop antenna worth considering is the DDDR which stands for Directional Discontinuity Ring Radiator (I think) or as it is sometimes called the Hula Hoop. Ref 6 gives details of one for 40 m and several designs for most bands are given in Ref 5. A flat roof-top location would be suitable.

THE PATRIOT'S SPECIAL

No it's not a bottle half-filled with explosive. This has been a great year for flag waving and the run-up to the bi-centennial celebrations will provide many other opportunities. So perhaps you need a flat-pole. Of course it really is a disguised antenna. Mother Nature hides her defenceless creatures by making them look like something else so why not do the same for your antenna.

Ref 4 suggests an 8-12 foot long aluminium pole, inclined at about 30° to the horizontal, clamped to the window ledge and fed against a single "radial" of number 28 enamel wire hanging from the ledge. A small weight is used to hold down the radial.

If you have a garden space then something a little more grand is in order. A flat roof would be another good spot.

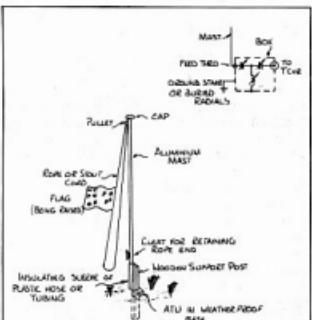


Fig 6. Conventional flagpole antenna. Like all verticals a good RF ground is required. Twenty 0.1λ radials buried a few (10) cm below the surface would be suitable. A two metre ground stake or fewer radials is an inefficient compromise. An ATU is required for multi-band use.

Fig 6 shows a construction of a conventional flagpole modified to allow operation as a vertical. There are two catches. Firstly unless the mast is half a wavelength long a good ground system is required. Twenty buried radials 0.1λ long is generally considered a minimum, although a two metre long ground stake is better than nothing at all.

The second problem is that nearby vegetation absorbs the radiated signal. Still any antenna is better than none at all.

Multiband operation can be obtained by using an ATU. Increasing the length of the mast will increase the efficiency at the lower frequencies but if the length exceeds $\frac{1}{4} \lambda$ at the highest frequency there will be a lot of radiation at high angles where it isn't of much use.

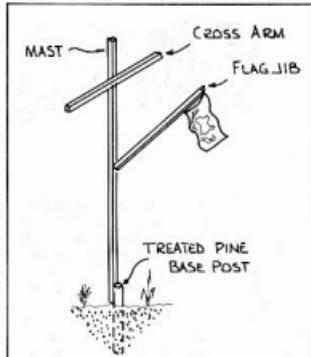


Fig 7(a). The flagpole disguised antenna.

Of course the most impressive flagpoles have a nautical appearance, like the one in Fig 7(a). A visit to your nearest naval station or seaside marina will give you plenty of alternative designs. Solid well-painted wood is recommended. A height of 7-8 metres would be fine. The next problem is to decide what sort of antenna to drape on the frame. All of these types of poles use extensive cables and ropes; most can be replaced by hard-drawn 16 SWG copper wire and insulators.

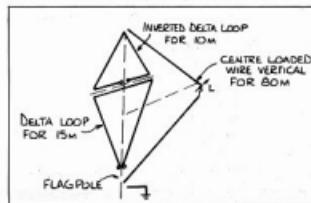


Fig 7(b). An arrangement for 10, 15 and 80 m. For the full call the 80 m antenna could be converted to a 40 m vertical or even a $\frac{1}{2} \lambda$ vertical on 20 m or a full wave loop on 20 m.

Fig 7(b) shows a three band design for the novice. Two delta loops, one for 10 m and one for 15 m, give some DX performance while a centre-loaded vertical will give quite acceptable performance on 80 m.

The delta loop should be 1λ in circumference on the operating frequency. The length in metres is given by $306/f$ (or $1005/l$ for the length in feet). See Ref 3. Feed both with 50 ohm cable.

The size of the coil for the 80 m antenna should be obtained by testing with a dip oscillator. Connect a small two or three turn coil between the feedpoint and ground so that the dip oscillator can be coupled to the antenna. Once resonance at the required frequency is obtained, the coupling coil is removed and a coaxial cable connected. Other frequencies could be used. A half-wave vertical (with a bend) for 20 m is possible, for example, or even a third loop.

For the all-bands-on-one-antenna the flagpole could be broadbanded as in Figs 7(c) and 7(d).

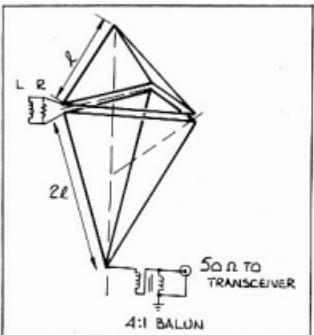


Fig 7(c). Vertical broadband travelling-wave vertical.

A 5:1 frequency range can be obtained with the design of 7(c). Ref 7 gives the following values for design of a similar antenna.

$$3L = 46/L_B \text{ metres}$$

where $3L$ = overall length and L_B is the bottom frequency of operation.

$$R = 377 \text{ ohms}$$

$$L = 0.9 \times 3L \mu\text{H}$$

(Values between 250 and 400 ohms may be tried.)

Treharne's design is for a sloping arrangement but from my experimental work with such antennas indicates that the above equations apply. Because the feed resistance

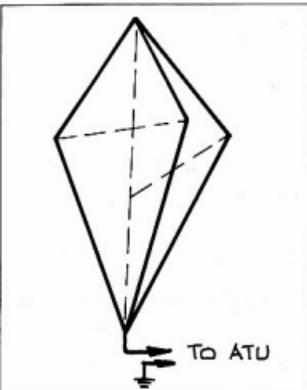


Fig 7(d). Broadband vertical in wire cone form. Best efficiency will be obtained when electrical length is equivalent to about $\lambda/2$. The actual height will be somewhat less.

is 200 ohms and a two metre stake provides an effective ground which is a significant advantage.

Fig 7(d) shows the old broadband wire cone vertical. An ATU may be used although a bandwidth of up to 3:1 may be attained without it. Ref 5 gives details of similar antennas. An efficient ground system is required and some experimenting would be

required to find the correct balun ratio. A noise bridge would be very helpful.

CONCLUDING REMARKS

This article would have been even longer if full construction details were given for every antenna mentioned. If you lack the confidence to try construction of any of these antennas you can always buy a commercial mobile whip. This can be fitted to your car and you can drive to the park or beach for your operating. For base-station operation you could fix the whip to a balcony rail, metal gutter or other sizeable piece of metalwork. Don't rely on hot-water pipes and never use gas pipes. A high RF potential on these could be very nasty.

73

de Ron, VK3AFW

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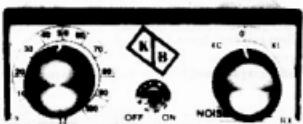


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* Patented device See review in ARA - Vol 6, Issue 3

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HOW'S DX

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

With a descending solar cycle, the DX scene is deteriorating rapidly and this trend will continue until the low is reached a few years hence. On the surface of this statement one may become despondent but there will be some good pickings in 1984 as there were in 1983, which turned out to be quite a year of surprises.

The Columbia Space Shuttle, with scientist Dr Owen Garriot, who holds the advanced amateur call W5LFL, aboard, created a lot of interest in the eastern states. I personally am not a two metre FM operator, maybe I am termed a listener, but I was horrified to hear the antics of fellow amateurs on designated "downlink" frequencies around when the shuttle was scheduled to be over this QTH. Also, a quick scan of the designated "uplink" frequencies, and the mass of "operators" who could not hear the non-existent Owen Garriot's dulcet tones, but were calling anyway.

Many times, in this column, complaint has been made of the behaviour of amateurs on prime HF Band DX frequencies, but this shemozzle was something to be heard and not to be forgotten, as many lessons could be learnt from it. Lessons that apply equally to all amateur operators. The prime lesson to be learnt would be do not call unless you can hear the DX station, otherwise cluttered QRM will result in no one getting a contact.

On the occasions that I heard them, the operation of the Laccadives expedition of VU7WCY, though limited to transceive, seemed to be very smooth considering the "dog pile" waiting and wanting to work them. The operators were very patient, with signals descending from all continents onto their omni directional dipoles, all callers being anxious to work one of the most wanted countries in the world.

The patience and perseverance by many operators was rewarded by a new country to them. A country that may not be operational again this decade due to the secrecy of their satellite programme emanating from that area.

One VK operator must have appeared in the log in excess of half a dozen times in two hours of listening which was very frustrating to many on low power trying to get into the log for a legitimate contact.

Congratulations to the VU operators for putting the Laccadives on the air and to the Indian administration for allowing activity from this much wanted country in World Communications Year 1983.

CHANGE OF PREFIX

Brunei gained independence on the 1st January this year. Celebrations to commemorate this event will be held this month and it is anticipated that members of the Royal Family and Commonwealth Nations will attend. The VS5 prefix will be superseded and it is understood that there will be a number of special stations active on the bands during the celebrations.

PULPING!!

A strange heading for a paragraph in this column but it is regarding QSL cards. It has been reported that one VK YL operator's OM has asked that any cards coming through the VK Federal Bureau for his XYL, who is not a member of the Institute, be destroyed or returned to the sender.

Personal feelings are that it is a shame that the hobby has become so mercenary that one has to resort to discarding a fellow operators card that is sent in good faith via the cheapest means, the bureau.

Recently, a similar occurrence was reported to be happening in the USA. This was more blatant, and it was a direct QSL that would only be replied to and then only if it was accompanied with adequate funds.

NEPAL

A new call originating from this area is 9N1RNK. The operator Krishna, advised me in a recent QSO that he hoped to be quite active in his off duty hours from his position with Radio Nepal. As there is no bureau in this country, Krishna advised that all cards be addressed to Krishna, C/- Radio Nepal, Kathmandu, Nepal.

4U1VIC

Well everything comes to those that are patient. Many VK operators should have logged 4U1VIC, a station that is located in the United Nations owned building in Vienna.

It does not at present qualify as a DXCC country due to the updated rules, which do not allow a separate administration country status (such as the UN station in New York). Whether this rule will be changed back to the original criteria in the future is unknown at the present.



Vienna International Centre — home of 4U1VIC.

SOUTH AFRICA

Bob Winn W5KNE, editor and publisher of ORZ DX, a weekly DX newsletter from the United States has written an excellent article of clarification regarding DX countries and the Bantu Homelands. This enlightening article is reproduced with Bob's permission.

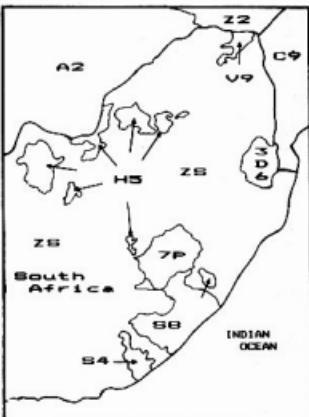
The Bantu Homelands . . . what are they? And where are they? The Bantu Homelands are located in South Africa. There are nine of these homelands, but only four are of any interest to DXers. The name Bantu is a collective term used to describe all Africans who reside in South Africa.

South Africa has designated less than fifteen percent of its land to become nine nations of homelands for its black people. Of those nine, four have become independent nations — recognised by South Africa and themselves, but by no other nation.

Transkei (S8), the first to become independent in 1976 consists of three enclaves located on the south east coast of South Africa. Bophuthatswana (H5), consisting of seven enclaves, became independent in 1977. Venda (T4 and S9) became the third independent homeland in 1979. The two enclaves of Venda are located in the north east corner of the Transvaal near the Zimbabwe border. The fourth homeland to become independent, in 1981, was Ciskei (S4). The single enclave of Ciskei is located on the south east coast near Transkei.

To some extent, the homelands resemble "reservations" where members of one tribe can be segregated. The United States Department of State in their Background Notes for South Africa describes the homeland as:

"Africans are not considered permanent citizens of South Africa, but rather of one of



the homelands to which each tribal group is assigned... When a homeland is granted independence, all the members of the associated ethnic group lose their South African citizenship and become citizens of the homeland. When the remaining homelands have been granted independence, South Africa will no longer have any African citizens."

Amateur radio operations have occurred from all four of the independent homelands, but none of them are accepted as separate countries for the DXCC award. For DXCC purposes, contacts with the homelands count only as South Africa. The ARRL doesn't accept the homelands as separate countries, because none of them are recognised by the rest of the world. However, the countries list for the 73 Magazine Work the World Award has listed both Bophuthatswana (H5) and Transkei as valid countries.

On the other hand, some experts argue that Transkei and even Bophuthatswana are closer to being real estates than some countries that are members of the United Nations.

NASTY MISHAP

It has been reported that Cliff Z1AKI, an experienced pilot noted for his ferrying of single engine aeroplanes and operating aeronautical mobile from many strange places, was hospitalised after being involved in a nasty mishap at a New Zealand Air Pageant.

Cliff, all those avid well wishers that have logged you over many years and DXers world wide wish you a very speedy recovery and hope to hear you on the airways again very soon.

JARVIS ISLAND

It is reported that the AD1S/KH5 group made nearly seventeen thousand contacts to 102 DXCC countries. Not a bad effort seeing conditions were not favouring all continents. One report was that only 200 European contacts were made. QSLs to AD1S.

NEW UPPER VOLTA CALL

Alain XT2BR, is operating SSB around 14.217 MHz from this sought after country.

QSL to PO Box 116, Ouagadougou, Upper Volta with IRCs.

KERMADEC ISLANDS

All is not lost, for this group of volcanically formed islands that lie nearly 1000 km northward from Auckland, to be activated by a DXpedition this year.

Warick ZL2AFH, has been heard around but at the time of writing he still is not "DX orientated" with all the duties that he has to do at the weather station on Raoul Island, the only really habitable island of the group.

Ron ZL1AMM, has written noting that the New Zealand Lands and Survey Department has issued a landing permit to a small group of New Zealand scientists to do field research in the Kermadec group. A kind invitation with the permission of Lands and Survey has been extended by the group leader to three New Zealand amateur radio operators to accompany them.

The party expects to be on the island for ten days this month and the amateurs will participate in as many contacts as possible on both CW and SSB.

CLIPPERTON

Still looking good for next month. It is hoped that more details will be available for the next issue.

AMAPA TERRITORY

Marcelo PY8BI, will be QRV from this rare territory on the 24 and 25th of this month. The mode will be CW only on all bands. QSLs to PO Box 203, 66000 Belem, PA Brazil.

ANTARCTICA

UV2IF has headed for the Antarctic continent and whilst in the area will use the unusual call ATOA. Prefix hunters do not miss this unique call. No details of QSL routes available.

VATICAN CITY

Brother Ed HV3VO, the main operator at the Vatican Observatory which is located at Castel Gandolfo, the Pope's residence outside Rome has been on leave in the United States and there is very little activity out of the Vatican station HV3SJ. Any activity from HV3SJ should be QSLed through IODUD.

SILENT KEY

Well known DXer over many decades and the operator with the mightiest signal from Europe, Luigi I0LLZ, recently became a silent key after a short illness. Condolences are extended from all DXers to his XYL Bianca.

SCOUT JAMBOREE

ZL2JAM, the official 1984 Scout Jamboree on the Air station was operational on all bands in early January. QSLs to ZL2APE or via the bureau.

WARC BANDS

Graham VK6RO, rang to give a few of the stations that he has worked on the WARC bands of late. Some of the stations that Graham has worked are 5B4PW, FB8ZQ, LX1YZ and TR8DX on 24 MHz. On 18 and 10 MHz FB8ZQ is in the log and the QSLs are on their way to F6GXB.

Noticed in an overseas publication that VK3AGW and VK6AKG have been noted as

being active and heard or worked in Europe. What about some more info on the bands so that the interest will not wane. Please forward your information on these and other bands so that it may be published for the interest of all.

AVES ISLAND

It has been reported that the Aves Island expedition will get underway by leaving YV territory on the 28th of this month. If everything goes according to plan they should be active within 48 hours of departure.

GRENADA

Many stories have been circulating of legal and illegal activity during and since the latest unfortunate experience hit the island. Many amateurs that participated in traffic have been kind enough to send explicit details for publication of their involvement but due to lack of space in this column it has been my decision not to print reports of any of the incidents, except comment that the two metre repeater that was damaged has been restored to working order and J37 and J39 prefixes are back on the airwaves, though at this time many are not DX orientated.

MACQUARIE ISLAND

According to all reports VK0CK has settled in and apart from the HF bands he has been very active on six metres when the band has been kind enough to open up. Congratulations to all those that have participated in getting six metres operational from this area.

WILLIS ISLAND

A short QSO with Graham VK9ZW, just after he had landed indicated that he would be as active as possible on the bands. He will be attempting RTTY, six metre and OSCAR operation as well as a little DX when time permits. QSLs to VK6YL.

MARKET REEF EXPEDITION 1983

Market Reef prefixes are generally in much demand on the DX bands and a group of Europeans comprising Kee OH0NA, as organisers, Lars OH0RJ, Steve G4JVG and Gerben PA0GAM launched an expedition last year.

Their intention was to commence their expedition from OJ0 on the 22nd July, but because of hazardous weather conditions they were not able to land. So as to keep interest in the expedition Steve and Gerben operated from /OH0 using the shack of Kee OH0NA. Kee's station consisted of a Drake TR7 driving an Alpha linear amplifier. Antennae was a TH3MK3 and dipoles for the lower bands.

Finally the weather improved and the group left the Ailand Islands on the 25th July. Normally a landing is made on the north side of the reef due to the steep cliffs on the other approaches. The weather was still rough and it was unsafe and their only option was to anchor on the southern side. Lars OH0RJ elected to swim ashore and come back with a small dinghy. The small boat was used to transport all the equipment to the operating site.

Market Reef is a small rock about 310 metres by 85 metres in size and is located at 60° 18' 10" N and 19° 08' 03" E which is between Sweden and the Ailand Islands. On the island is an automatic weather/lighthouse

AR SHOWCASE



LOW COST VHF MARINE WALKY TALKY

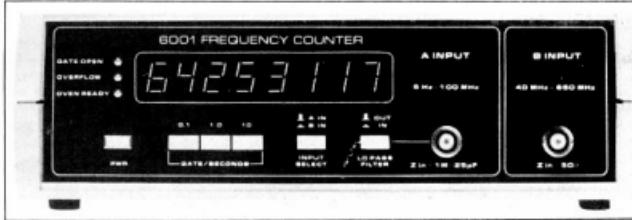
GFS Electronic Imports of Mitcham, Victoria have announced the availability of the Nirecom Model NR-6000 VHF FM Marine handy talky. They claim that it is possibly the lowest cost VHF Marine transceiver available in Australia.

The Nirecom NR-6000 is approved by the Department of Communications and is supplied complete with a set of crystals for channel 16, the emergency/calling channel. It is capable of having up to 6 channels installed including those of the seaphone service.

Standard accessories included with the NR-6000 are rechargeable Ni-Cad batteries, rubber duck whip antenna, battery charger, carrying case and earphone.

Because of its small size the NR-6000 offers the advantage of being able to fit inside a coat or life jacket pocket as well as provide communication from a position on the bridge.

The latest technology is used throughout the NR-6000's construction and as such its receiver sensitivity is extremely high providing maximum range.



For further information on the NR-6000, contact the Australian distributors, GFS Electronic Imports, 17 McKeon Road, Mitcham, PO Box 97 Mitcham, 3132, Victoria. Phone (03) 873 3777.

AR

650 MHz FREQUENCY COUNTER OFFERS SELECTABLE GATE TIMES AND INTERNAL/EXTERNAL TIMEBASE FACILITIES

New from Global Specialties, the Model 6001 is a benchtop 650 MHz frequency counter offering a very wide range of facilities, including dual inputs, switch-selectable gate times, and the use of both internal and external timebases for transducer, tachometry and flow-metering applications as well as general-purpose frequency measurements. The instrument is designed for flexibility and ease of use, with a minimum of front-panel controls and comprehensive input and output facilities to suit a variety of applications.

The Global Model 6001 covers a frequency range from 5 Hz to 650 MHz; one of the two front-panel BNC inputs is used for signals from 5 Hz to 100 MHz, and the other covers the range 50 MHz to over 650 MHz. The lower-frequency input has an input impedance of 1 M ohm + 10 pF, with a switchable low-pass filter providing 3 dB/octave roll-off at 50 kHz for audio and ultrasonic measurements, while the higher-frequency input provides a 50 ohm input impedance and fuse protection.

Three switch-selectable gate times are offered: 0.1, 1.0 and 10 sec, giving resolutions of 10, 1 and 0.1 Hz, respectively. A light-emitting diode on the front panel indicates a 'gate-open' condition. The 8-digit, 0.43 inch high LED display offers lead-zero blanking, a decimal point in the megahertz position, and a contrast enhancement filter to ensure legibility in high-ambient-light environments. Other front-panel indicators are provided for 'open-ready', 'overflow' and 'power on'.

The internal timebase for the Global Model 6001 is a precision 10 MHz oven-controlled crystal oscillator, with an accuracy of ± 0.5 parts per million from 0 degrees to 50 degrees

celcius and a normal oven temperature of 55 degrees celcius. The external reference can be selected with a rear-panel switch. The oven-oscillator output is buffered, and is available via a rear-panel BNC connector. Inputs and outputs are compatible with standard TTL circuitry.

A second rear-panel BNC connector provides the input connection for an external timebase reference from 1 to 25 MHz. Use of such a timebase at a frequency other than 10 MHz allows the counter to operate in a 'scaling' mode in which the input frequency is multiplied by a factor between 0.1 and 25 so that the output is presented in different measuring units; hence the instrument can be used as a direct-indicating digital display in applications such as transducer translation, flow monitoring and tachometry.

The Global Model 6001 is mains-powered, measures 76 x 254 x 178 mm and weighs 1.4 kg. It comes with a comprehensive instruction and application manual.

Global is represented in Australia by Vicom International Pty Ltd of: 57 City Road, South Melbourne 3205. Phone: 62 6931 and 118 Alfred Street, Milsons Point 2061. Phone: 436 2766.

AR

Space

Air Force Major General James A Abrahamson says that NASA will allow UoSAT B to be a secondary payload on the LANDSAT-D mission, scheduled for launch in February or March 1984. However, some repackaging of UoSAT B will be required before the spacecraft will fit into the Delta 3920 launch vehicle. A "SMALL" cost (\$25,000) will be incurred by NASA to fabricate a special interface/mounting unit to mate the satellite with the launch vehicle. NASA will be reimbursed for this cost.

On 15th November, 1983, the Julian Day (the numerical day of the year) and the OSCAR orbit number were the same (319), a unique event.

from ARRL Newsletter, November 1983

AR



All times are Universal Co-ordinated Time,
indicated as UTC

AMATEUR BAND BEACONS

FREQ	CALLSIGN	LOCATION
50.005	H44HIR	Honjara
50.008	JAI2GY	Mie
50.020	GB3SIX	Anglesey
50.060	KH6EQI	Pearl Harbour
50.075	VS6SIX	Hong Kong
50.945	ZTS1SX	South Africa
51.020	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK0OCK	Macquarie Island
52.200	VK8VF	Darwin
52.250	ZL2VHP	Palmerston North
52.300	VK6RTV	Perth
52.310	ZL3MHS	Christchurch (1)
52.320	VK6RTT	Carnarvon
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.440	VK4RTL	Townsville
52.465	VK6RTW	Albany (2)
52.470	VK7RNT	Launceston
52.510	ZL2MHF	Mount Clime
144.019	VK6RBS	Busselton
144.400	VK4RTT	Mount Mowbullan
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.475	VK1RTA	Canberra
144.480	VK8VF	Darwin
144.550	VK5RSE	Mount Gambier
144.600	VK6RTT	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.057	VK6RBS	Busselton
432.410	VK6RTT	Carnarvon
432.420	VK2RSY	Sydney
432.425	VK3RMB	Mount Bunninyong
432.440	VK4RBB	Brisbane
1295.171	VK6RBS	Busselton

Notes: (1) This is a new beacon recently installed and advice came from ZL3ADT via Tom VK2DDG. It runs 20 watts to a J Pole antenna. The only query I have is that the callsign may be ZL3MHS, as that is a fairly common beacon suffix in New Zealand, and the message came to Tom via 6 metres, so an S can be heard in place of an F. Tom said he copied it at 529 at 2345 on 11th December, 1983, so it should be possible to verify the callsign before long with the 6 metre band being open so often. Thanks Tom.

(2) Advice has been received that the 6 metre Albany beacon is again operational and on its recommended frequency.

SIX METRES

Everything considered, the month of December, 1983, must be ranked as one of the truly great periods for VHF in Australia! There has been something for everyone. Es has appeared on almost every day and been far ranging in its coverage so that on a number of occasions all call areas VK1 to 8 have been

VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

worked. There have been plenty of contacts with New Zealand stations, and there has been a sprinkling of long distance DX, so if you weren't operational during that period you have missed a most interesting period. So six metres has again borne out the predictions laid down years ago that as the low part of the sunspot cycle comes along, contacts via Es are enhanced. 1963 was a great year for 6 metres and was about five years after the peak of Cycle 19. As 1979 was considered the peak of Cycle 21 it seems logical that 1983, four years later should be good, maybe 1984 and 1985 will be even better!

Bob VK5ZRO, Mick VK5ZDR and Garry VK5ZK have added to my log and covered those periods when I have not been able to get on the band, and the following is a brief outline of what transpired during December on six metres.

Remember that the band was open to somewhere almost everyday — ordinary everyday contacts are not included here, mainly comprising VK2 and VK4. On 3rd December things started to hot up with Jim VK9NS on Norfolk Island appearing at 2315. He was a new country for me and for a lot of others too, with excellent signals. At 0110 it was to VK6KZ, VK6KDX, VK6R0. Later over to VK2 and VK4. The next morning (same UTC day) at 2153 we had Eric FKOAO from Noumea, then followed more VK2 and VK4. At 0343 it was up to P29ZFS and P29ZFD in New Guinea, later swinging around to VK6 again.

7th December: more VK6 plus 2 and 4; same again for the next week until 15th December when the band was wide open all day, you could work almost anywhere you wanted to, with 144, 432 and 1296 also available (see further down), 18th and 19th December good for VK2 and VK4, with VK6 being added on the 20th.

On 23rd December VK5ZRO and many others worked all States and ZL districts and included VK8GF and VK5KK/8 for good measure! On 25th December plenty of VK3 stations worked from 0500, then in came VK7. At 0645 we were to be greeted with David VK0OCK at Macquarie Island putting in a colossal signal, and we know he worked a lot of stations, giving most their first VK0. It is believed he worked VK1, 2, 3, 4, 5, 6, 7 and 8 but I will not be able to confirm this until our next 20 metre sked on 1st January, 1984. At 0723 it was back to VK7 again, at 1053 VK6. What a day!

26th December: 0100 VK4, 0400 VK6, 0545 VK5KK/8, 0600 back to VK6. Incidentally, around 0445 VK5ZRO and VK5RD worked VK6ZPG on 6 metres RTTY at 5x9. 27th December: VK2 and VK4 again. FKB was being heard in VK5 on 52.050 but could not be worked because of constant contacts being made between VK2 and VK4 stations on the calling frequency although stations in those States had already worked the FKB, but they effectively blocked anyone else from working

him when the skip lengthened and they continued to yak yak on 52.050!!!

As mentioned earlier much more occurred on 6 metres than the above would seem to indicate. The ZLs were certainly strong when in, and there were a lot of VK3 stations very strong, which of course gave the indicators for the two metre contacts which were to follow. Generally speaking, good manners prevailed on the band even when very busy. I heard a couple of grumbles about wide signals but I think there were more grumbles being levelled at those who continue to make contact after contact on 52.050. I have a list of eleven offenders noted by me, and these are people who, having been called on the calling frequency had the initial contact and then went on to have others without shifting. I should publish the list but I won't (for the time being anyway!). Both sides of the contact are equally to blame of course, as either one can initiate a move to another part of the band.

TWO METRES AND ABOVE

Of course six metres didn't have it all. Because of the high density of Es it was inevitable something would have to happen on two metres and it did! One two metre contact which has come to my notice and not helped by Es was between VK5ZDR and VK7LB at 1100 on 4th December with 5x5 signals. Good work.

23rd December: What a day! I don't even remember (not for a long time anyway) such an all enveloping Es cloud. As reported earlier, six metres was providing massive signals from everywhere. My work as TV technician brought me in touch with the fact the Channel 2 in Adelaide was being wiped out in many areas of the country districts in which I work by Channel 2 from Sydney and Brisbane. Quite a lot of work involved in convincing customers that there was nothing we could do about it! I was pretty certain the MUf was going a lot higher as signals were appearing on Channel 6. Being the Friday before Christmas, it was a 12 hour working day for me so I missed all the fun, but I returned home to find that two metre contacts had been made between VK5 and VK2 and 4, VK3 and VK4, and so on. Mick VK5ZDR worked twelve in VK2, including one who had a QRP rig (3 watts) completely enclosed in a suitcase and including the antenna! Most signals were 5x9 and remained from 0715 to 0845. Garry VK5ZK worked six in VK2 and ten in VK4. Bob VK5ZRO missed the VK4 stations but did work VK2KWA at 0730 whilst he (Bob) was returning home from work, on 144.1 MHz SSB. At home at 0750 Bob worked about six VK2s before the band closed. VK5ZRO also sent out 70 cm signals and VK2BKL, VK2ZMG and VK3ANP all reported a possible hearing of the 70 cm signal, but nothing more.

25th December: 0130 to 0300 many VK stations worked in VK5, with areas in VK4

ranging from Brisbane to as far north as Proserpine. Mick VK5ZDR worked twenty four stations. At 0400 the band opened to Sydney and a number of stations were also worked on 144.1. Mick of course was alerted to the two metre possibility as being an old hand at the game he knew the strong short skip signals from VK3 heralded an opening on that band. Those of us who went to other homes for Christmas dinner missed out so the moral is, don't go out for Christmas dinner!!

Mick VK5ZDR reported backscatter signals from VK1, 3 and 7 on 27th December but nothing eventuated from this. Mick also reported the Albany beacon VK6RTW on 144.465 was heard from Tuesday morning (20th December) to Thursday night (22nd December) without a sign of any other signals appearing from the west! Another missed opportunity!

Bob VK5ZRO reported 15th December was a good day also. He worked VK6KJ and VK6WG at 1225 on 144 and 432 MHz, and mentioned contacts had been made between VK5 and Albany on 1296 MHz as well.

THE VK3 TWO METRE SCRAMBLE GROUP VHF/UHF CONTEST

Unfortunately information for this contest did not arrive on my desk until the middle of December, much too late for anything to be done at the time. It appears the Group led by Robert VK3XQ and Peter VK3YRP were aiming to run the contest in parallel with the Ross Hull Contest, with the intention of encouraging newer operators or operators with equipment only for one or two bands, to take part in the VHF/UHF Contest activity during the December/January period.

The idea was a good one, as it would hopefully keep some of those people operating who felt they could never compete with the big guns in the Ross Hull. Providing information is to hand by 20th September next year (1984) it can be included in the November issue of "Amateur Radio". The December issue is too late. May I suggest the organisers study the results of what happened this year (news of the additional contest was included in Division broadcasts etc) amend the rules accordingly and advise preliminary information say for inclusion in the August issue.

LOCATOR SQUARES

It had to happen, I made an error! A number in fact! I was first alerted to what had gone wrong by Peter VK3YRP, and subsequently by Folke Rassvall, SSMACM in Sweden, to whom I had airmailed a copy! In transposing from the northern hemisphere to the southern hemisphere I started at the wrong end of the scale with the result the third, fourth, fifth and sixth figures of the locator squares published in "Amateur Radio" for November 1983 are incorrect. Sorry chaps, it's my fault and I take all the blame, but at least I'm being honest about it and not trying to pass the buck on to someone else!

The first two letters:

These are correct as per the map on page 47 of November "AR". For those of you who will be using the system, may I suggest you make a photocopy of the map from that issue, together with a photocopy of the information in this issue and by bringing the two lots

together you will have the correct information for your use.

The third character:

This is determined by your longitude in degrees east as follows:

Longitude degrees east	Third character	Longitude degrees east	Third character
110-111	5	146-147	3
112-113	6	148-149	4
114-115	7	150-151	5
116-117	8	152-153	6
118-119	9	154-155	7
120-121	0	156-157	8
122-123	1	158-159	9
124-125	2	160-161	0
126-127	3	162-163	1
128-129	4	164-165	2
130-131	5	166-167	3
132-133	6	168-169	4
134-135	7	170-171	5
136-137	8	172-173	6
138-139	9	174-175	7
140-141	0	176-177	8
142-143	1	178-179	9
144-145	2	180-181	0

The fourth character:

This is determined from your latitude in degrees south as follows:

Latitude degrees south	Fourth character	Latitude degrees south	Fourth character
10	9	30	9
11	8	31	8
12	7	32	7
13	6	33	6
14	5	34	5
15	4	35	4
16	3	36	3
17	2	37	2
18	1	38	1
19	0	39	0
20	9	40	9
21	8	41	8
22	7	42	7
23	6	43	6
24	5	44	5
25	4	45	4
26	3	46	3
27	2	47	2
28	1	48	1
29	0	49	0

The fifth character:

This is determined by your minutes of east longitude as follows:

Minutes of Longitude east	Even minutes	Odd minutes
0-5	A	M
5-10	B	N
10-15	C	O
15-20	D	P
20-25	E	Q
25-30	F	R
30-35	G	S
35-40	H	T
40-45	I	U
45-50	J	V
50-55	K	W
55-60	L	X

The sixth character:

This is determined by minutes of latitude south as follows:

Minutes of latitude south	Sixth character	Minutes of latitude south	Sixth character
0-2.5	X	30.0-32.5	L
2.5-5.0	W	32.5-35.0	K
5.0-7.5	V	35.0-37.5	J
7.5-10.0	U	37.5-40.0	I
10.0-12.5	T	40.0-42.5	H
12.5-15.0	S	42.5-45.0	G
15.0-17.5	R	45.0-47.5	F
17.5-20.0	Q	47.5-50.0	E
20.0-22.5	P	50.0-52.5	D
22.5-25.0	O	52.5-55.0	C
25.0-27.5	N	55.0-57.5	B
27.5-30.0	M	57.5-60.0	A

Example:

VK5LP location is longitude 138° 54' 21.2" east, latitude 34° 47' 39.3" south. Thus from the original map the first two characters are

PF. The third character is determined from the 138 degrees of longitude and from Table 3 becomes 9. The fourth character is determined by the degrees of south latitude and being 34 becomes a 5 from Table 4. The fifth character is determined by the minutes of longitude east and being 54 becomes K from Table 5. (Had the figure been 55 then the 21.2 seconds would put the figure ABOVE 55 so it would have been L.) The sixth character is determined by the 47 minutes of south latitude. At first on reference to Table 6 one might say the sixth character is F. But the 39.3 seconds indicates over the half minute (30 seconds), so the 47 needs to be read in the section 47.5 to 50.0 which is E. So my location using the corrected tables is now PF 95 KE, which is quite a bit different from the PF 04 NS in November!

I apologise for any inconvenience the incorrect tables may have caused, but I suppose a little consolation can be drawn from the fact that only one amateur in Australia picked up the errors. However, now that the corrections have been made may I suggest you make the photocopies as mentioned before and you will have the Locator System at your fingertips ready for any contest etc which may eventually be established using the squares for identification.

Remember though, this Locator System works equally well for any part of the world, and if you require information which will allow you to determine squares for areas beyond Australia and New Zealand, then I have the original information here, which can be sent to you on receipt of a stamped self addressed envelope of the 230 mm x 100 mm size. Phew! Am I glad that's all behind me!

50-54 MHZ DX STANDINGS

DXCC Countries based on information received up to 29th December, 1983. Crossband totals are those not duplicated by 6 metre two-way contacts. Credit has not been given for contacts made with stations when 50 MHz operation was not authorised.

Column 1: 6 metre two-way worked
 2: 6 metre two-way confirmed
 3: Crossband (6 to 10) worked
 4: Crossband (6 to 10) confirmed
 5: Countries heard on 50 MHz
 6: Countries heard on 52 MHz

Callsign	1	2	3	4	5	6
VK2BA	28	28				
VK2DDG	26	25	2		12	3
VK3OT	25	25				10
VK2VC	22	22				
VK3AMK	17	17				
VK5LP	17	15				7
VK3AUJ	15	14				
VK4TL	14	11				
VK6OX	10	10	1	1		
VK6RO	8	8	3	3	2	

NOTES RELATING TO THE ABOVE:

The 6 to 10 metre contact of VK6OX was with G5KW on 27th November, 1980 and is a very meritorious contact. The two similar contacts by VK2DDG were with ZD8 and 5W1. In addition, VK2DDG has six US States confirmed. With the publishing of this list there may be sufficient incentive for some more stations to contribute; I personally know

of many who have more than fifteen countries and some more than twenty.

The minimum number of countries confirmed for an operator to commence being listed should be five in my opinion. VK and ZL and probably P29 gives most active operators three countries to start with, Japan is also relatively easy to make four, so what have you got to make five or more?

I am aiming to have an up-date of this list in the August, 1984 issue, so your information will need to be on my desk no later than 15th June, 1984 please. I thank the above operators for their interest in sending in the information, some of it has been updated by them several times, and I thank them for their patience.

TWO METRE STANDINGS

Because of our relative isolation from the rest of the world it is not quite so easy to come up with a suitable 2 metre standings box, but there are some operators in VK who have worked outside Australia to other lands and deserve a mention for their efforts.

Accordingly, it is planned to ask for submissions from interested operators on the two metre band under the following headings: Callsign (your station).

Callsign of station worked, date worked, time (UTC), Country, Mode, report sent and received, QSL sent and received. (All this information is required for both overseas and Australian contacts.)

One station to be so listed from each Australian call area worked.

One station to be listed from any overseas country worked.

This information to be on the VK5LP desk no later than 15th July, 1984 for inclusion in a Two Metre Standings Box in the September 1984 issue of "Amateur Radio".

VHF ACTIVITY OVERSEAS

A letter from Doug VK4AIZ (formerly VK4ZZI and VK2ZZI), includes some information received by him from Ken G8VR on the VHF scene in Europe. The following is relevant and interesting.

"The 2 metre band is absolutely chock full of loud signals any day when conditions are anything at all. 432 MHz is quiet until there is an opening and then it goes berserk too, with some phenomenal distances being worked. The joy about operating VHF here is that within 300 miles (500 km) or so you can work some twenty different countries. Some of the major auroras in the past two years have extended right down to Yugoslavia, Italy and as far east as the USSR.

"The main DX activity is on SSB and CW. The CW end is 144.0 to 144.15, though not much happens on CW above 144.1. The SSB calling frequency is 144.300 where a contact is established and then moved to another frequency. So in any sustained period on the band, using either mode, one could expect to work into Europe and Scandinavia with typical prefixes being G, GI, GM, GW, GJ, GU, EI, F, ON, D, LX, HB9, OZ, LA, SM, Y22, SP, OK, OE and EA. Of course those further away have to await a good tropo opening. During the summer we get unpredictable Es openings with phenomenal DX capability, right down to the Mediterranean (Greece this year), Malta, toe of Italy, Yugoslavia, Rumania etc. All very exciting. So far I have worked forty seven countries in 238 'locator squares' on 2

metres!"... Ken G8VR.

Such information tends to bring home further just how isolated Australia is, and it becomes even further isolated as we go up in frequency ... 5LP.

FROM KATOOMBA TO SYDNEY ON 10 GHZ

Dick VK2BDN has been working Bill VK2ZAC in Sydney regularly from his Katoomba QTH.



Dick operating his 10 GHz narrow band FM transceiver.



Close-up of Dick's transceiver.

Photos by A Williams VK2ZAL



Photo courtesy JA1RJU

THE MELBOURNE SCENE

Doug VK3UM wrote a letter back in October which gives an interesting account of just what can be worked from Melbourne if you are keen and prepared to get out of bed early enough in the mornings plus evening contacts. In the tradition set by Gordon VK2ZAB whose work has been listed previously — Doug omits those contacts which have been close in. Here is some information from his letter:

9th July, 1983: VK5DJ Millicent, VK5ZO Mt Baker, VK5ZDR Henley Beach, VK5AO5 Western Victoria, VK5APF Berri, VK2BY Broken Hill, VK3KVW Mildura, VK5ATD Rendlesham, VK5ZK Goolwa and VK7DA. Contacts were mostly S7 to S9, with an occasional S5. (But note the wide range over which the contacts were made, quite incredible ... 5LP.)

17th July, 1983: Another good day, with VK2ZAB Sydney, VK2YEZ Griffith, VK2XBD and VK2DFC. Throughout July and early August there were a constant stream of contacts between VK2ZAB, with a few other VK2, 3 and 5 thrown in, leading up to a good session on 13th August with VK1RK, VK2ZAB, VK1KAA and VK1VP, signals from S3 to S9. Further contacts with VK2ZAB in the main until 4th September when VK5DJ, VK2ZAB, VK1KAA and VK2ZHT were worked, mostly S5.

24th September: VK5DJ, VK2ZAB, VK2QP, VK1RK to S7. Doug's signals on 432 MHz were also copied in Sydney! 1st October: VK5DJ, VK3AKN, VK1RK, VK3ZQS/1, VK2QP, VK1CJ, VK2ZAB and VK1KAA with almost a repeat on 2nd October with VK1RK, VK2ZAB, VK1CJ, VK1KAA, VK1VP and VK2QP, signals to S7.

The conclusions to be drawn from the above is that there appears to be quite an interested band of people scattered over a wide area ready, willing and able to work 144 and 432 MHz with anyone prepared also to put some effort into it. Until this type of information began filtering through in the first place from Gordon VK2ZAB and now from Doug, I did not realise there was so much activity going on and I am certain most others

Well known VHFers get together at the 1983 WAC SMIRK Convention. L to R: JA1RJU, N5TX, EI9D, VK8GB, LU7DZ and C5AEH, W6JKV.

were not aware of it either! So one needs to be very careful when stating how "dead" the bands are, it seems a fair degree of general activity goes on all the time in selected areas anyway. I know something akin to this is occurring in southern Queensland, and of course we do have something on a smaller scale here in VK5 between Adelaide and our northern areas and the western coastal regions. We must also remember the large degree of similar activity in VK6 about which we hear very little but I know it is going on!

CONCLUDING

As mentioned at the start, it's been quite a month! What with FK0 and FK8, VK9NS, P29, many ZLs, A35, then culminating in VK0CK from Macquarie Island, we have had a treat. Then to cap it all, plenty of two metre Es all around the country. One can conceivably expect this to be more or less repeated next year and the year after, so we have some good times ahead of us I am certain. And I am always hopeful for extended 144, 432 and 1296 MHz contacts, particularly to Albany, around the end of January/early February — it's happened for a number of years now and I see no reason for 1984 to be an exception. Well know before you read this!

The Space Shuttle contacts so hopefully expected between amateurs and W5LFL on board the Shuttle were a fizz. However, one should not really expect too much socialising to be done on such missions; it was only by the good grace of NASA that anything could even be attempted, and if something goes wrong up there perhaps hundreds of millions of dollars are at stake, then we amateurs will always get the short end of the stick, so not let us become too disappointed, there may be another time in the future which will be successful.

I thank all my correspondents during the past year for the information they sent in, without it, the column would be somewhat drab — it may be that to some now but I can only do the best I can with the time my work allows me to get on the air so those of you who keep me informed also help to keep others informed. So many of you write kind letters of thanks regarding the column that it does really make it seem the large amount of effort expended at this end is worthwhile. Thanks.

I wish you all as happy and prosperous 1984 as conditions will allow and hope to meet as many of you as possible on the VHF bands.

Closing with the thought for the month: "One of the secrets to a long and fruitful life is to forgive everyone everything every night before you go to bed." 73. The Voice in the Hills.

AR



HELP
INTRUDER
WATCH

Please help INTRUDER WATCH
by reporting all intruders.

RADIO AMATEUR OLD TIMERS' CLUB QSO PARTIES



Each year, two QSO parties are held for members of RAOTC Australia, and Old Timers' Club New Zealand.

Members are requested to cut out this notification and keep it before them as the days, times, and bands will remain fixed.

RULES

ELIGIBILITY — The parties/contests are open to members of RAOTC (Australia) and OTC (New Zealand).

Note — There are members of the Australian Club in overseas countries who could possibly participate at the times laid down.

CONTEST EXCHANGE — Members will exchange:

1. Their Club membership number, VKs prefixed by "A", ZLs prefixed by "Z".
2. Year of first licence.
3. Name.
4. Age.

Eg Number A256 1951 Bill 49
Number Z128 1923 Harry 78

SCORING — One completed contact with a member on CW or SSB but not both, will score 5 points.

MULTIPLIER — the total of VK, ZL and Overseas call areas contacted.

FINAL SCORE — Contact points times multiplier.

DATES, TIMES, AND BANDS

No 1 — Second Monday in March — 20 metres 0200 to 0500 UTC.

Please spread out around centre frequencies CW 14.050 and SSB 14.150 MHz.

No 2 — Second Monday in August — 40 metres 0800 to 1100 UTC. Centre frequencies CW 7.015, SSB 7.075 MHz.

ENTRIES — Claimed scores showing mode (CW, SSB or CW/SSB), number of QSOs and multiplier should be forwarded to John Tutton VK3ZC, 31 Denham Street, Hawthorn, Victoria 3122.

All amateurs who have been licensed for a period of 25 years or more are eligible to join the Radio Amateur Old Timers' Club. A self-addressed envelope (9 x 4) to the Secretary, Harry Cliff VK3HC, PO Box 50, Point Lonsdale, Vic 3225 will bring you a membership application form.

1984 Contests — 12th March and 13th August.

AR

AMATEUR RADIO MAGAZINE AWARDS



Max VK3ZS



Bruce VK5XI



Ivan VK5QV

At the December meeting of the Publications Committee awards for 1983 were selected.

The Alan Shawsmith Journalistic Award was awarded to Max Hull VK3ZS for his article about pioneer radio amateur Max Houlden in October AR, with an honourable mention to Dave Shaw VK3DHF/DH1 for his Heard Island story.

The Higginbotham Award for service to Amateur Radio Magazine went to Bruce Hannaford, VK5XI for his "Here's RTTY" columns.

Technical Award for the best technical article for 1983 was awarded to Ivan Hüser VK5QV for his "Weekend Project" series of articles, with an honourable mention to Drew Diamond VK3XU for "Square One Receiver" series.



HERE'S RTTY!



Fred Robertson-Mudie, VK1MM
FEDERAL RTTY CO-ORDINATOR
Box E46, Queen Victoria Terrace, ACT 2600

FOR MEMBERS DISCUSSION

The following is a set of guidelines to be discussed at the 1984 Convention. Member feed back is most important so that definite policy can be determined.

NARROW BAND MODES — ASCII, BAUDOT (RTTY) AND AMTOR (ARQ/FEC)

Considering:

1. AOCP and LAOCP minimum requirement for narrow band mode transmission.
2. The desirability of agreed calling frequencies and frequency allocations for such transmissions.
3. The different types of store and forward repeaters being developed.
4. The different types of narrow band modes in use and being developed.
5. The increasing number of narrow band mode users.
6. The need for agreed technical and other standards.

The Federal Council makes the following recommendations:

Technical:

1. Types of emissions used shall be F1 (frequency shift keying), and A2 and F2 (audio frequency shift keying) using a frequency shift of not more than 850 Hz. In addition, the occupied bandwidth of A2 and F2 emissions shall be confined within the limits of ± 3 kHz.

2. The following international standard codes shall be used:

BAUDOT (RTTY) CCITT2
SITOR/AMTOR CCIR
ASCII CCITT5

or any other internationally recognised code.

NB THE ABOVE POINTS 1 AND 2 ARE MANDATORY, AS PER THE REGULATIONS.

3. The standard shifts commonly used are:

170 Hz 425 Hz 850 Hz

The recommended shift for amateur usage is 170 Hz.

4. The standard tone pairs commonly used are:

Shift			Low Tones	
Mark		Space	High Tones	
170	1275	1445	2125	2295
425	1275	1700	2125	2550
850	1275	2125	2125	2975

It is recommended that amateurs use the above tone pairs for their transmissions. On HF the use of either high or low tones will be governed by the individuals choice and the pass-band of the transmit filter. On VHF FM, it is recommended that high tones be used to avoid incompatibility.

5. The standard transmission speeds (Baud rates) commonly used are:

AMTOR — 100

BAUDOT — 45 50 57 75 100

ASCII — 110 150 300 upwards

It is recommended that the following speeds be used for HF transmissions:

AMTOR — 100

BAUDOT — 45

ASCII — 110

6. The standard formats commonly used, and recommended, are:

AMTOR — 7 unit code (synchronous)

BAUDOT — 7.5 unit code (1 start, 5 data, 1.5 stop)

ASCII (110 baud) — 10 unit code (1 start, 7 data, 2 stop)

ASCII (300 baud upwards) — 9 unit code (1 start, 7 data, 1 stop)

Operational:

The following frequency segments and calling frequencies are recommended for use on the various amateur bands:

Band	Segment	Calling Frequency
160M	1825-1835	1825
80M	3620-3640	3630
40M	7040-7060	7050
30M	10140-10150	10140
20M	14070-14110	14090
17M	18100-18110	18100
15M	21075-21125	21090
13M	24920-24930	24920
10M	28050-28150	28090
6M	52080-52100	52080
2M(FM)	variable	146600
2M(SSB)	variable	144075
70cm	?	?
23cm	?	?

General:

1. Technical and operational standards and practices should be researched and promulgated for the benefit of existing and future users of these modes, and as part of an awareness programme for the benefit of non-users.

2. Band plans and standards for these modes should be published in each and every edition of the WIA Call-Book.

3. Regulatory requirements for all narrow band modes, as well as for store and forward repeaters should be researched, and amendments suggested where necessary.

All comment on this matter should be directed to: The Federal RTTY Co-ordinator at the above address.

AR

BOOK REVIEW

WORLD RADIO TV HANDBOOK

The 37th edition of this directory coincided with World Communications Year.

Primarily designed for the shortwave listener and broadcaster, this book has now set higher goals. It contains details not only of power frequency etc, but also of management, ownership even the telex numbers.

Checking the Australian listing shows that it is very accurate and current. The only

omission that I found was in the ABC-FM service. Stations such as Mildura were not included, but these have only come on air during the year.

Every radio and television station is included in detail. Just thumbing through the section on South America shows how enormous the broadcasting business is; and I only looked at the television section.

Coupled with equipment reviews, DXing techniques, even the electricity supply

standards makes the book very informative. In fact the only spot where I could not obtain all the information I needed was the Danish Faroe Islands. Odd as the book is published in Denmark.

The serious shortwave listener already knows how valuable this book is, for those with just a passing interest it is highly recommended. Our copy came from the publisher but any technical bookshop should have it.

Evan Jarman, VK3ANI
TECHNICAL EDITOR

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Special permission has been received from the author, David Morrison and the Features Editor of Electronics and Power, Laurence Marchini to reprint this article which appeared in Electronics and Power magazine in April 1983. This magazine is an Institution of Electrical Engineers Publication. David is Reliability Engineering Manager at the Queensferry Telecommunications Division of Hewlett-Packard in Scotland.

NATIONAL EMC ADVISORY SERVICE



Tony Tregale, VK3QQ
FEDERAL EMC CO-ORDINATOR

DESIGNING AGAINST ELECTROMAGNETIC EMISSIONS

All electronic products are potential generators of electromagnetic interference and are themselves potential victims. Regulatory controls on emissions are increasing, as are customer expectations for product immunity.

by David J Morrison

The design engineer tends to concentrate, quite rightly, on the uniqueness of his design. However, to be successful as a new product, that uniqueness must be accompanied by an ability to meet certain criteria that apply equally to competitors. Safety is an obvious must, and for electronic products this usually translates into designing in compliance with

international standards like IEC 348 and IEC 388, and where necessary national standards such as UL 478, UL 114, CSA C22.2 No 154, BS 6204, and BS 3861. A list of abbreviations used in the text is given in Table 1.

Electronic products have long been recognised as potential sources of radio interference, and international work in the

form of CISPR recommendations has formed the basis for many national regulations. As electronic products find more and more applications in the home, the office and the factory, and the use of digital circuitry and especially microprocessors flourishes with ever-increasing clock frequencies, the various national regulatory bodies have addressed themselves to the need for controlling electromagnetic emissions. Considerable publicity surrounded the FCC Regulations in the United States covering computing devices.

In this context a computing device is essentially any product with a clock rate in excess of 10 kHz. The FCC limits on RF voltages on mains cables and on electromagnetic emissions from such products resulted in considerable redesign of existing products by many companies. In some cases the withdrawal of the product from the US market by October 1983 was found to be the only cost-effective solution.

Without a common policy, EEC countries have different requirements for emission control. The most stringent are those in West Germany. There regulations, made under the 'High frequency equipment act', call for compliance with VDE 0871. As notified by FTZ 1115/1982, new regulations will require all electronic products such as data processors, text editors, products containing microprocessors including products like electronic musical instruments to be tested and labelled, as of the 31st December, 1984. Other European countries are considering similar labelling schemes, and failure to meet these emission limits and regulatory requirements will effectively kill off the market potential for such products.

A designer must also consider the effects of electromagnetic disturbances on the performance of his product. The mild electric shock and faint crackle of static electricity is a familiar phenomenon. The effect of such discharges, usually from operators touching the product, can vary from complete immunity through transient misbehaviour to some form of fault condition.

Recovery may simply be a matter of

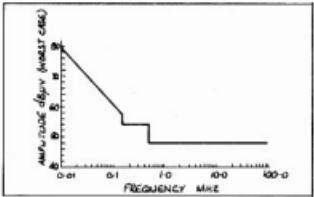
Table 1. List of abbreviations used in the text

BS	British Standard, issued by the British Standards Institution. May be referenced in legislation applicable to the UK
BS 3681	
BS 6204	Specification for safety of data processing equipment
BS 4743	Safety requirements of electronic measuring apparatus
CISPR	Comité International Special Des Perturbations Radioélectriques (International Special Committee on Radio Interference)
CSA	Canadian Standards Association
CSA C22.2	CSA Standard C22.2 No 154-1975, Data processing equipment
DIN	Deutsches Institut für Normung (German Institute for Standardisation)
EEC	European Economic Community
FCC	Federal Communications Commission, the regulating body for electromagnetic emissions in the USA
FCC part 15	Radio frequency devices. Section 15.4 was modified to include computing devices and peripherals after 1981 for new products and 1983 for products already in production
FTZ	Fernmeldetechnisches Zentralamt (Central Telecommunications Office). The regulatory body for radio interference in West Germany
FTZ 526/1979	General permit for the erection and operation of measurement receivers for laboratory and workshop purposes
FTZ 1115/1982	Radio interference suppression from high frequency apparatus for industrial, scientific and medical (ISM) and similar purposes. Requires all products to carry a VDE radio protection mark after 31/12/84
IATA	International Air Transport Association
IEC	International Electrotechnical Commission, the international body for electrical standards
IEC 380	Safety of electrically energised office machines
IEC 348	Safety requirements of electronic measuring apparatus
IEC 435	Safety of data process equipment
IEC 388	Thermal time delay switches for use in equipment for telecommunication and in electronic applications employing similar techniques
UL	Underwriters Laboratories Inc
UL 478	Electronic data processing and systems
UL 114	Office appliances and business equipment
VDE	Verband Deutscher Elektrotechniker
VDE 0877	The measurement of radio interference (RFI)
78/776/EEC	Council directive amending 71/316/EEC
71/316/EEC	Council directive on the approximation of laws of Member States relating to common provisions for both measuring instruments and methods of metrological control

switching off and on but, in extreme cases, the product may require component replacements to achieve a complete recovery. Power-line transients, voltage dips and transients on the earth line also give similar symptoms of misbehaviour, as can high electromagnetic field strengths, from operation of radio transmitters in close proximity to the product. The increasing use of citizens' band and portable transceivers for security and productivity purposes has correspondingly increased the likelihood of commercial products being subjected to high field strengths.

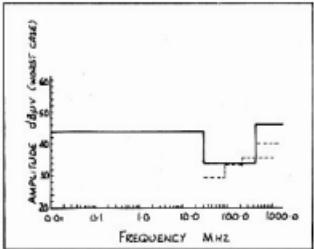
DESIGN OBJECTIVES

Emissions are sufficiently regulated that the designer needs to consider all the countries into which he wishes the product to sell, to determine his design criteria. As an intermediate step, it is necessary to ensure an understanding of the classification of products in various countries. For example, frequency counters are measuring receivers' in West Germany and must meet the requirements of FTZ 526/1979. Composite limits derived from a number of standards for conducted and radiated emissions are given in Figs 1 and 2. These composites serve well as design objectives.



1 Suggested design objectives for conducted emissions

FCC level A limits for commercial equipment are less onerous, FTZ 526 limits are 12 dB less onerous for narrowband; FCC limits start at 450 kHz. These limits are tightened by 2 dB when only a single sample is tested as per VDE 0871.



2 Suggested emission limits for radiated emissions based on a 10 m measuring distance

FCC level B limits apply to personal computers and peripherals; FTZ 526/1979 uses a substitution technique and is not shown here; FTZ 1115/1982 will tighten the present West German limits at greater than 470 MHz by 6 dB. These limits are tightened by 2 dB when only a single sample is tested, as per VDE 9871.

Table 2. Typical electrostatic voltages and component sensitivities

Voltages	(70-90% rh)	(10-20% rh)
walking across vinyl floor	250 V	12 kV
walking across synthetic carpet	1.5 kV	35 kV
sitting on foam cushion	1.5 kV	18 kV
picking up standard plastic bag	600 V	20 kV
sliding plastic box on carpeted bench	1.5 kV	18 kV
pulling tape from PC board	1.5 kV	12 kV
skin packing PC board	3 kV	16 kV
triggering standard solder remover	1 kV	8 kV
cleaning circuit with eraser	1 kV	12 kV
freon circuit spray	5 kV	15 kV
Damage sensitivities		
class 1: (0 to 1 kV)	<ul style="list-style-type: none"> • unprotected MOS (discretes and ICs, especially VLSI) • MOS capacitors (op amp compensation) • advanced Schottky logic (FAST, ALS, LS³) • junction FETs and low current (<0.15 A) SCRs • microwave and VHF transistors and ICs (especially Schottky) • precision (-0.5%) IC voltage regulators • precision (-0.1%) and low-power (-0.05 W) thin-film resistors • VLSCs with dual-level metallisation 	
class 2: (1 to 4 kV)	<ul style="list-style-type: none"> • MOS ICs with internal protection (CMOS, NMOS, PMOS) • Schottky diodes (rectifiers) • linear ICs (bipolar) • high-speed bipolar logic (ECL, LS-TTL, S-TTL) • monolithic ceramic capacitors 	
class 3: (4 to 15 kV)	<ul style="list-style-type: none"> • small-signal diodes (<1 W) & transistors (<5 W) • low-speed bipolar logic (TTL, DTL) • quartz and piezoelectric crystals 	

(based on measurements using 100 pF discharged through 1.5 kΩ).

Choosing appropriate design objectives for the immunity of a product is less easy than for the emissions. Apart from some requirements laid down by major customers, and those of the EEC Directive 78/766 which is an amendment to 71/316/EEC for measuring instruments, there are no widely accepted standards. The selection of design limits thus necessitates an understanding of the likely environment in which the product will operate.

Table 2 lists the electrostatic voltages which typically might be present. The human body can sense current flow when the discharge occurs from above about 4 kV, but many electronic devices may be damaged by as little as 1 kV or less. Although high relative humidity reduces the human perception of static, even 90% relative humidity does not prevent the buildup of potentially damaging charges.

Monitoring of power lines in domestic and office environments shows them to be subject to a whole variety of disturbances such as slow voltage changes, frequency variations, harmonics, sudden changes and rapid fluctuations, DC components, voltage dips, spikes ripple and RF signals. Line transients of 1000 V and upwards, with risetimes of the order of a few nanoseconds and duration of a few microseconds are not unknown, as are oscillatory transients with 100 kHz to 500 kHz components. Mains dips, sometimes with an entire cycle missing, can also be observed.

Ambient electromagnetic radiation field strengths are generally well below 1 V/m, but in the neighbourhood of high-power transmitters, or when transceivers are operated in close proximity, this may no longer be true.

Table 3 gives the immunity requirements from 78/766/EEC, and these can be used as a basis for determining design criteria, although

the directive itself is only applicable to a limited range of products. As will be discussed later, the test methodology is just as important as the test limits and, when design objectives are selected, the methodology must also be considered.

Users of air freight should also be aware of the IATA restrictions on magnetic materials, that is on products emitting magnetic fields in excess of 0.525 T, 3 ft (0.9 m) from their shipping carton surface.

DESIGN GUIDELINES

The solution to all electromagnetic problems, be they excessive emissions or undue susceptibility, is to be found in Maxwell's equations. Unfortunately the complexity of the practical situation, of unknown stray capacitances and mutual inductances, of nonlinear source and load impedances, makes an analytical approach virtually impossible. Thus a mystique of almost 'black art' proportions has grown up around the solution of such problems. Yet in reality, the solutions are within reach, provided that the problems are tackled from a basis of understanding.

The first step in ensuring a design that will maintain its emissions below the legal limits is to suppress the potential generators at source. One of the most common sources of radiated emissions is the basic clock of digital and microprocessor circuits. Logic families with slower risetimes, and slow clock rates, such as CMOS are less likely to cause emissions than Schottky TTL or ECL. The increasing clock rates used in today's microprocessors are of course one reason for regulatory concerns, but extending pulse risetime, and limiting activity on internal databases can make an important contribution.

Table 3. Susceptibility requirements in 78/776/EEC

power-line susceptibility:	100% voltage reduction for approximately 10 ms 50% voltage reduction for approximately 20 ms 20% voltage reduction for approximately 50 ms the time interval between two consecutive interruptions assumed to be at least 10 s randomly phased transient overvoltages of either polarity supplied in common-mode and series-mode from an impedance of 500 Ω , as below:		
amplitude	risetime	half-amplitude	repetition
500 V	2 ns	100 ns	10 Hz
1500 V	25 ns	1 μ s	<12 Hz
300 V	burst of pulses lasting for about 1 ms of about 1 MHz		<12 Hz
5% of the nominal value	sinewave superimposed on the mains		30 kHz to 150 kHz
1 V	sinewave superimposed on the mains		150 kHz to 400 MHz
radiated susceptibility:	<ul style="list-style-type: none"> induction field induction field to 60 A/m and 50 Hz obtained for example by a cable carrying 10 A at a distance of about 2.5 cm electromagnetic radiation field strength of 10 V/m at frequencies of 100 kHz to 500 MHz field strength of 1 V/m at frequencies of 500 MHz to 1000 MHz 		
electrostatic discharge:	electrostatic discharge of 6 kV with energy of 2 mJ on earthed chassis with a minimum of 10 s between individual discharges		

High-speed logic has significant harmonics in the 100-500 MHz region, when the path lengths on printed-circuit boards are a significant fraction of the wavelength. Thus interconnections must be considered as transmission lines, and terminated at both ends in their characteristic impedance to avoid reflections and standing waves.

As logic switches, sudden current surges can couple unintentionally onto other printed-circuit board tracks unless each area of board is adequately decoupled. It is important to recognise that capacitors of 0.1 μ F or above, while theoretically providing decoupling may have self-resonances at frequencies as low as 13 MHz, so smaller capacitors, such as 0.001 μ F, should be used liberally for decoupling the higher-speed logic.

The design of the earthing system needs careful thought. A single-point system with potential earth loops broken by transformer baluns or optoisolators prevent earth loops acting both as radiators and receiving aerials. Digital earths should be separated from analogue and power-supply earths and, for products with multiple plug-in boards, each board should have as many connector pins as possible allocated to providing earth returns, spaced out along the length of the connector at 2-3 cm intervals.

Current flowing in a loop forms a natural radiator, so circuit loops should be kept to a minimum. Where multilayer printed-circuit boards can be justified, they provide a most effective method with an entire layer allocated to earth and another to the power supply. As well as minimising emissions, this technique minimises coupling from external sources, such as static discharges and radiated emissions. Alternatively tracks in excess of about 15 cm can be run as twisted pairs, to minimise emissions. To limit radiated emissions still further and increase circuit immunity from external signals, the entire circuitry can be enclosed in a Faraday cage, of either metal or metallised plastic. It is important to ensure such a cage is properly

bonded, with joints of typically 0.1 m Ω spaced as a minimum every 5 cm or so. Beryllium-copper contacts, or alternative gasketing systems may be required if the shielding effectiveness of 30 dB or above is to be achieved.

The Achilles heel of mains-powered products is often the mains cable. Adequate power-line filtering, to remove both asymmetrical and symmetrical line transients, and to filter emissions from the products can be built or purchased relatively cheaply. Routing the power cable and tracks on printed-circuit boards to minimise coupling is also a sensible safeguard. The power-line filter should be located as close as possible to the mains inlet, shielded and firmly bonded to the product earth to minimise coupling across the filter. Even so, filters are unlikely to give isolation much in excess of 50 dB, because of such cross-coupling.

Products with other interconnecting cables, such as signal or data lines, are further at risk. These cables all act as potential aerials to pick up external disturbances, including static discharges, and unless properly filtered and screened may act as radiators themselves. The 1981 revision of VDE 0877 limits the RF voltages on certain types of connection cables, and once again buffering and filtering of external signal lines from internal switching must be considered. Most, if not all, interconnecting cables should be shielded and, to ensure good system performance, properly shielded connectors and good quality cable need to be used.

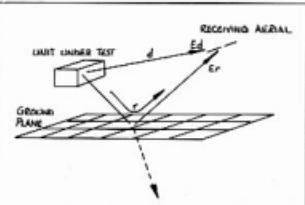
These are but a few of the good design practices available to minimise emissions and maximise the immunity of a design to external disturbances. In simple cases, the effectiveness of each can be quantified, but it is by direct experience that an engineer will be able to recognise the appropriate actions required to solve any particular design problem.

TESTING

A typical 10 MHz Schottky TTL signal with

6 ns risetime and 3 V swing will need over 80 dB of isolation from the mains cable to make the product meet the VDE level B limits. With only about 50-60 dB coming from any mains filter because of crosscoupling, the further 20-30 dB must come from proper isolation between logic and mains lines. That 10 MHz signal if passed along a 10 cm² loop would typically create a 34 dB μ V/m field at a distance of 10 m with its 10th harmonic. Coincidentally the VDE and FCC class B limits are both 34 dB μ V/m at that distance. Such calculations indicate that no product can be certain of meeting typical emission requirements without rigorous testing. Similarly, to ensure adequate immunity, a controlled testing programme is necessary.

Any testing requires well defined test conditions to ensure repeatability. In emission testing in particular, the test conditions have a considerable effect on the measured values, with errors in excess of 20 dB easily achieved by inexperience, or inadequate control of test conditions. Describing the measurement of voltages on mains cables and other interconnecting cables takes no less than 43 pages in VDE 0877, and that excludes the specifications of the measuring equipment itself!



3 Ground reflections in radiated emission testing.

Radiated emission testing, which in principle consists of pointing a directional aerial at the unit under test, even more so requires careful control to achieve repeatability. The first difficulty is that the measuring aerial picks up both the direct emission, and a reflection from the ground, as shown in Fig 3. The reflection depends on the ground-plane conductivity, permittivity and permeability, and changes in soil conditions can have significant effects. To maximise repeatability, a conducting ground plane of steel or aluminium can be used to cover the test area. To minimise reflections from surrounding structures, the test must be conducted in a large open space with test personnel and equipment preferably located below the ground plane. The roof of a building provides a suitable location, and several successful sites have been built in this way both in Europe and the USA. The additional benefit of a roof site is that test personnel and equipment can be placed below the ground plane, with the minimum of expense, and the unit under test driven remotely.

Testing for susceptibility requires additional specialised test equipment, facilities and skills, depending on the nature and severity of the standard adopted. Static discharge can be simulated by discharging 10-15 kV from an RC circuit simulating the

human body. Typically 30 pF through 500 Ω is used. Test equipment can be bought or made inhouse to apply a variety of line transients both asymmetrically and symmetrically, as can equipment to apply controlled dips and short dropouts to the mains input. Electromagnetic field generation, particularly for larger products is particularly difficult, although parallel-plate transmission lines and anechoic rooms can be used, provided that their limitations are fully appreciated.

MEETING OBJECTIVES

The final objective is to make a marketable product, and meeting emission and immunity objectives are but a step in this process. An integral part of the development process must be a testing programme that starts with the very first prototype, since by later stages fundamental changes to earthing, board layout or packaging concepts are too costly. Subsequent retesting at each stage is also necessary, since design changes can so easily impact on the electromagnetic performance of the product.

For compliance with requirements such as those set by the FCC, self-certification is possible for all but personal computers. Thus proper documentation of test results by the

manufacturer or a test house is all that is required. The administrative difficulties, delays and additional costs of meeting regulations which require third-party testing, such as those that will be required in West Germany by the end of 1984, put additional pressures on smaller companies in particular, since they have to recover their certification costs over a small number of unit sales; so cost minimisation by being right first time is even more important.

The need for a solution to electromagnetic problems often falls to the digital designer who may well have forgotten his transmission line, coupling, earthing and wave-propagation theory. The mechanical designer addressing the product packaging also has a profound effect on the product's electromagnetic performance, as have the people charged with laying out tracks on printed-circuit boards. Thus an entire design team may be ill-equipped to tackle the electromagnetic problem — and yet someone must.

There is a need to understand such electromagnetic issues, what to aim for, how to achieve it. With the aim of providing that knowledge, the IEE is holding a week-long Summer School at the University of Sussex in July 1983. The course topics will cover the

legally enforceable regulations worldwide and give an understanding of the electromagnetic environment. Two days of more theoretical work covering earthing, shielding, coupling transmission lines and filters, will be complemented by a further two days on practical measurement methods and case studies, giving results and design solutions.

The regulation of electromagnetic emissions will continue to grow, particularly in the absence of an EEC directive covering data processing and other products loosely known as industrial, scientific and medical apparatus. Growing customer expectations that purchased products will work in the user's electromagnetic environment mean that immunity requirements are becoming ever more demanding. The continuing fall in the hardware cost of electronics makes the provision of specially controlled environments less acceptable as a solution.

Properly understood, electromagnetic phenomena can be lifted from the province of the 'black art' to one of 'sound engineering practice'. For many designers, it does, however, mean developing new skills.

• Designing against RF emission. 10th-15th July, 1983. Information from LSEI, Savoy Place, telephone 01-240 1871, ext 308.

AR

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH
CO-ORDINATOR

33 Somerville Read, Hornsby Heights, NSW 2077

The Intruder Watch in the USA has undergone a re-vitalisation programme. The name has been changed to the ARRL Interference Reporting System (AIRS). Why the change?

The ARRL Committee says that "more than being merely cosmetic, this name change recognises the fact that it is the duty of every Amateur Radio Operator to maintain vigilance against all forms of harmful interference in the Amateur Bands, and not solely to 'watch for intruders'. Indeed, the International Radio Regulations make no reference to 'intruders', but simply to *harmful interference*, which can have many causes."

The present Intruder Watch in the USA has about 200 members, a dozen or fewer of whom submit the vast majority or reports on harmful interference. It was decided by the ARRL Committee that membership in AIRS should be limited to a small number of dedicated amateurs who have both the technical knowledge and receiving equipment necessary to provide quality data. It is anticipated that there will ultimately be 25 to 35 AIRS stations with AN EVEN GEOGRAPHICAL DISTRIBUTION around the United States. As with the present Intruder Watch, the support of the FCC will be vital in order to make the AIRS programme successful. Only the FCC (or in extreme cases, the US Department of State) can officially notify offending administrations that their stations are treading on frequencies officially allocated to the Amateur Radio Service. FCC staff has reviewed the AIRS programme, and has expressed approval of its objectives and procedures. In Australia, only the DOC (or sometimes the Department of Foreign Affairs)

can make representations to other Administrations. As with AIRS and the Australian Intruder Watch, it is important that both services maintain records of complaints against intruder stations for future reference. Any intruder station who claims user's rights to an amateur frequency, by virtue of the fact that no complaints have been registered against it, can think again when confronted by documentary evidence of complaints held by the Australian Intruder Watch. Don't forget: as mentioned before in this column, "Any Administration can assign ANY frequency to ANY of its Services, and so long as no complaints are received, can then BE CONSIDERED TO BE LEGALLY ON THE FREQUENCY." Think about that again. Can you see how important it is to have complaints against intruders received and held by the Intruder Watch?

The IARU Region 111 Intruder Watch Co-ordinator, ZL1BAD, Bob Knowles, has written to the Korean Central News Agency in Pyongyang, Korea, complaining about spurious appearing on 14.025 MHz and 14.108 MHz from the operations of their stations, HHM21/HME28 on 13.780 and 15.633 MHz. The stations use RTTY at a shift of 500 Hz, and a rate of 50 Bauds.

To finish off this month, I think it is about time an updated list of the VK Divisional Intruder Watch Co-ordinators was presented for the information of amateurs wishing to make reports on intruder stations.

VK1 . . . VK1MM, F Roberson-Mudie, Box E288, Queen Victoria Terrace, ACT, 2600.
VK2 . . . VK2EBM, B Martin, 33 Somerville Rd, Hornsby Heights, NSW, 2077.

VK3 . . . VK3JY, S Phillips, 37 Mangarra Rd, Canterbury, Victoria, 3125.

VK4 . . . VK4KAL, A G Lovday, "Aviemore", Rubyvale, Queensland, 4702.

VK5 . . . VACANT — If interested, contact VK5 Divisional Council.

VK6 . . . VK6NV, B Hunt, Unit 8, 96 Guildford Rd, Mt Lawley, WA, 6050.

VK7 . . . VK7OW, J Davis, 55 James St, Launceston, Tasmania, 7307.

VK8 . . . VK8HHA, G A Andersson, PO Box 1418, Darwin, NT, 5794.

See you next month.

AR

Pirate Yachty Convicted

The owner of a Lyttelton based yacht pleaded not guilty in the Christchurch District Court to a charge of maintaining an unlicensed Amateur Band transmitting station. Post Office Inspectors had seized a Yaesu FT301 and a Yaesu aural tuning unit from the vessel, but the defendant claimed that it was not operational since it was not connected to an aerial. He was attempting to use one of the Provisions of the Post Office Act to justify this defence, but the District Judge ruled that the evidence submitted by the Post Office was sufficient for him to find that the case was proved, and the defendant was convicted and discharged on condition that Court and Legal costs were paid, and that the Amateur Band equipment be sold to a purchaser approved by the Post Office. The Judge commented that "spectrum anarchy" could become a problem if use of frequencies were not properly controlled.

from Break-in, November 1983



AWARDS

Do you like a challenge? If you do then perhaps the P-75' P award is for you. This award is issued by the Central Radio Club of Czechoslovakia.

At the 1959 radio conference of the ITU the world was divided into seventy five broadcasting zones. It is these zones that form the basis of the award. The beauty of this award is that you do not have to compete in monster pile-ups to work the zones as most zones have countries/areas in them which are not sought after by the average DXer. Nevertheless this is not an easy award to acquire as some of the areas have minimal amateur populations.

The rules for this award are as follows:

- 1 *The award is available to all amateurs.*
- 2 *Only contacts dated 1st January, 1960 or later are valid.*
- 3 *The award comes in three classes: (a) The third class award is for fifty different confirmed zones, (b) The second class award is for sixty different confirmed zones and, (c) The first class award is for seventy confirmed zones.*
- 4 *The report should not be less than 337 on CW or thirty three on phone.*
- 5 *GCR rules apply when the QSLs have been checked by the National Society's award manager. In this case the list of contacts must contain locations (QTHs) of the listed stations.*
- 6 *The fee for this award is ten IRCs and application should be sent to: Central Radio Club, Awards Manager, PO Box 69, 113 27 Praha 1, Czechoslovakia.*

Mike Bazely, VK6HD
FEDERAL CONTEST MANAGER
8 James Road, Kalamunda, WA 6076



CAIRNS AMATEUR RADIO CLUB

Black Marlin Award

Certificate No. _____

Date: _____

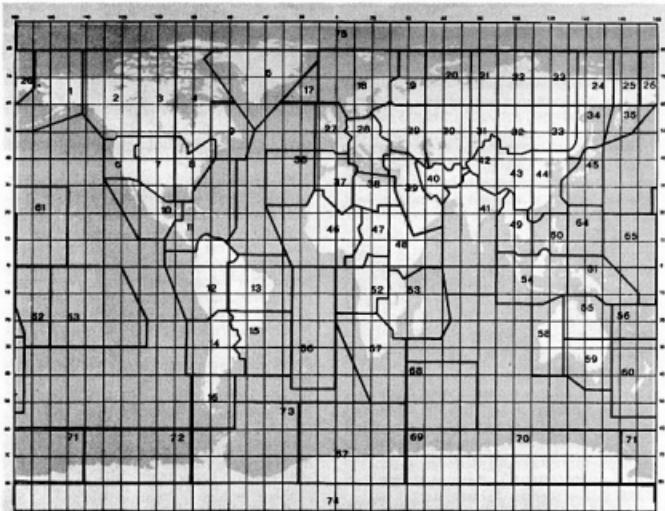
Club President

This is to certify that Amateur Station

has satisfied this Committee that he has had two way communication with the following CAIRNS STATIONS:

1.	6.
2.	7.
3.	8.
4.	9.
5.	10.

Awards Manager



A copy of the zone map is shown in this column. Any WIA member who is interested in obtaining a list of countries/areas applicable to each zone may do so by sending me a large self addressed stamped envelope. (Do not forget to include your address label from your copy of Amateur Radio as this proves you are a WIA member.)

Other awards that are available from the CCRC are as follows: S 6 S — This award is available for a confirmed contact with each of the six continents. Contacts must be either all CW, phone or RTTY and endorsement stickers are available for each individual band. ZMT — This award requires applicants to have one confirmed contact with each of the following thirty nine areas: OK1, 2 and 3, HA, LZ, UA1, 2, 3, 4, 6, 9 and 0, UB, UC, UD, UF, UG, UH, UI, UJ, UL, UM, UN, UP, UQ, UR and three different regions of Y2, SP, YO and YU. The OK100 award is available for confirmed contacts with 100 different OK stations. Stickers can be gained for each additional 100 contacts.

Applications for the S 6 S, ZMT and OK100 awards should be sent to the above address with five IRCs and the normal GCR rules are acceptable. It should be noted that all the CCRC awards are available to Short Wave Listeners.

Those of you who have been working stations with the special suffix 'WCY' may be interested to know that there is an award to

**THE
MATTHEW FLINDERS AWARD**

AWARD No: _____ DATE: _____

AWARDED TO: _____

CALL SIGN: _____

ENDORSEMENTS: _____



IN 1802 HMS INVESTIGATOR, COMMANDED BY CAPTAIN MATTHEW FLINDERS, ENTERED A FINE BAY ON THE TIP OF THE EYRE PENINSULA OF SOUTH AUSTRALIA. SEVEN YEARS LATER IN 1809, THE FIRST OF THE SETTLERS LANDED IN BOSTON BAY, THE LARGEST NATURAL HARBOUR IN AUSTRALIA, TO ESTABLISH WHAT IS NOW THE CITY OF PORT LINCOLN. HOME OF THE SOUTHERN TUNA FISHING FLEET AND A HUGE HULL PLANT AND Silo Complex of 354,000 tonnes capacity for the export of grain. IT IS THE QTH OF VISALE THE CLUB STATION OF THE LOWER EYRE PENINSULA AMATEUR RADIO CLUB.

AWARDS MANAGER: _____

PRESIDENT: _____

**LOWER EYRE PENINSULA AMATEUR
RADIO CLUB**

commemorate World Communication Year. This award requires confirmed contacts with fifteen stations using the special suffix and can be obtained from: DL9XW, DARC WCY Award Manager, AM Strampel 22, D-4460 Nordhorn, West Germany. The usual GCR rules apply and the cost of this award is ten ICRs or equivalent.

BLACK MARLIN AWARD

The Cairns Amateur Radio Club is offering their Black Marlin Award now for VHF contacts. These contacts must be direct and no repeater contact will be eligible for the Award.

To be eligible, four contacts must be made with Cairns Amateur Radio Club members who, at the time of contact, must be at least 100 km away. Contact may be made with the same station but to be worth a point, must be made at least a week apart.

The HF Award remains the same with seven club members living within 100 km of Cairns.

Price of Award is \$2 and a copy of log entry must be forwarded with application to PO Box 1426, Cairns, Qld 4870.

EYRE PENINSULA AWARD

Here are the details of the first ever Eyre Peninsula Award:

To be called the "Matthew Flinders" Award,

it will be printed in four colours on pale blue silk screen and take the form of a Bannerette.

Description:

Outline and lettering in black.

Award scroll: Black letters on Yellow/Gold.

Ship: "Investigator", Yellow/Gold sails — white hull — black outline — red flags.

Size: 190 mm x 220 mm

Rules:

- 1 Only contacts on or after the 29th January, 1984 will be allowed.
- 2 Australian amateurs will need contact with four club member stations plus the club station VK5ALE.
- 3 Overseas stations will need contact with two club member stations or the club station VK5ALE.
- 4 No QSLs are needed. Log extract will be sufficient.
- 5 The Award is available to Short Wave Listeners in Australia for hearing four club member stations plus the club station and for overseas listeners for hearing two club member stations or the club station.
- 6 Contacts may be made on any amateur frequency and in any mode but cross band operation is not permitted.

The club station will be manned for two

hours from 1030 UTC every Friday night on the club net, net frequency 3.560 MHz. The club station will also be available for half an hour every Monday night after the Slow Morse Broadcast on 3.550 MHz.

Applications should be sent to the "Awards Manager", Box 937, Port Lincoln, SA 5606.

Finally, the new DXCC certificate is in the process of being put together by the printer. As soon as the final format has been approved I will publish details of how you may acquire one and the band/country endorsement stickers to go with it. 73 de Mike VK6HD.



QSP

**STATE ELECTRICITY
COMMISSION OF
VICTORIA VIEWPOINT
ON EARTH LEAKAGE
DEVICES**

(Adapted for 'AR' from SEC notebook)

The SEC thinks earth leakage devices can provide a high degree of additional protection from electric shock, in certain situations.

Most electrical appliances are earthed, which means that if the appliance becomes faulty the electrical current flows back to earth and blows the fuse or operates the circuit breaker supplying the circuit. The earth wire is the safety valve to protect you against electric shock.

Earth leakage devices can provide added protection if the earthing system becomes ineffective. They disconnect power almost instantaneously when even a very small current is detected leaking from the active wire.

However, these devices protect only against shocks from current passing from a live conductor through the body to earth. It is still possible to receive a shock by coming into contact with both active and neutral conductors, or two active conductors on different phases. This could happen, for example, if you opened the back of an appliance connected to power and touched both the active and neutral wires.

Earth leakage devices, commonly called "core balance" devices, are available in fixed and portable versions.

The fixed type is designed for installation on a switchboard and can be arranged to protect the whole installation or part of it and must be installed by a licensed electrician. There are also units available which are built into power points.

The portable type may be simply plugged into an existing power point and usually has two plug socket outlets.

AR



ALARA

Australian Ladies Amateur Radio Association

Hello to all again and welcome to the following new members:

Marlene	VK2KFO	11/11/83
Meg	VK5NOE	26/11/83
Pat	Z56VC	20/11/83
Helene	VK6NSH	23/11/83
Shirley	ZL1MY	20/11/83

ASSOCIATES

Jean Darling 23/11/83

Jean Shaw 12/12/83

June Greenaway 23/12/83 L60068 YF of VK6DA

Pauline Koen 23/12/83 who has passed portion of the Novice exam so best of luck with the rest of it Pauline.

PR RESULTS

Two of these ladies have joined ALARA as a result of the article in New Idea; the response has exceeded our expectations with forty letters so far, including one from Brisbane radio station 4BC. I was interviewed on Thursday 8th December on one of the talk back segments, as ALARA's VP and we had seven minutes to air.

I have received a photocopy of an article in the "Wireless Weekly" Friday 3rd April, 1931 from a gentleman in Brisbane who heard the interview. The article is on the four licensed YL operators at that time; Austine VK3YL; Mrs E L Hutchins VK3HM; Mrs MacKenzie and Dorothy Harris VK4DH.

Next month I will use some of the article and hope everyone finds it to be interesting, certainly our very early history and Austine of course is one of our members.

CONTEST RESULTS

As promised the results of ALARA's contest No 3. Congratulations to Mavis VK3KS — top score overall and VK3 member winner.

VK3KS	Mavis	780	A	**
VK4BSQ	Wendy	775	A	
VK3XB	Ivor	656	OM	
ZL1B1Z	Elva	532	A	
VK3CYL	Kim	521	A	
VKA4TK	Connie	521	A	
VK3DYF		507		Club station
ZL1B0D	Roly	462	OM	
VK3LC	All	434	OM	
VK3DYL	Gwen	425	A	
VK3SU	Freda	420	A	
ZL1YF	Shirley	419	YL	
VK3DML	Margaret	405	A	check log
VK3DYL	Valdi	341	A	
VKA4OE	Margaret	335	A	
VK3AHD	Margaret	332	A	
VK3QSO	Marilyn	325	A	check log
VK6NYL	Bev	317	A	** Top Novice score
L40018	Charles	315	SWL	
VK2EBX	Joy	294	A	
VK3DMS	Marilyn	292	A	
VK3YL	Denise	285	A	
VK3FV	Gail	268	A	
VK7HD	Helene	259	A	
VK2PLG	Sue	258	A	
VK4VKT	Valerie	258	A	
L30037	Peter	215	SWL	
VK3AW	Margaret	214	A	
VK3AW	Poppy	185	A	
VK6YF	Tom	168	OM	
VK4NUN	Elizabeth	167	A	
VE7BIP	Val	148	A	
VK4KJG				

Photograph by Ken McLachlan VK3AH



Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450

L to R: Mavis VK3BIR, Kim VK3CYL, Joan VK3NLO, Mavis VK3KS, Gwen VK3DYL, Margaret VK3DML. Front: Suzanne VK2PSC and guest of honour Ruthanna.



nets she had qualified to apply for the award with her Australian call. Ruthanna has been a member of ALARA since 30th March, 1981.

Until next month take care.

73/33/88 Margaret VK3DML



VIDEO RECORDERS SUSCEPTIBLE TO UNWANTED EME ... DOC OFFICIAL

At last the DOC has released a press statement which says they have accepted that VCRs do in fact receive radio signals outside their operating bands. Which means they have a poor susceptibility factor... the fault of the manufacturer.

The DOC spokesman said not all VCRs were susceptible to unwanted signal interference and customers should seek permission to use a VCR for a trial period before purchase.

Let's hope the DOC takes fast action, under the new Radiocommunications Act, against manufacturers and importers who are dumping substandard equipment on unsuspecting Australian consumers.

NATIONAL EMC ADVISORY SERVICE

AK

WICEN NEWS



Ron Henderson, VK1RH
FEDERAL WICEN CO-ORDINATOR
171 Kingsford Smith Drive, Melba, ACT 2615

Newcomers to amateur radio might be wondering what the letters WICEN stand for, what it does and how to join in. Well WICEN is short for Wireless Institute Civil Emergency Network, the title of a divisional based organisation which provides communications for disaster control agencies in emergencies. WICEN is set up slightly differently in each state to match the local needs so the list of divisional co-ordinators which follows a little later in this column is your contact point if you wish to join in this worthwhile activity.

WICEN's mission is to provide a pool of trained operators with equipment ready to assist the disaster control agencies with communications in an emergency.

WICEN CO-ORDINATORS

Federal: Ron Henderson, VK1RH QTHR
ACT: Rob Apathy, VK1KRA QTHR
NSW: David Mackay, VK2ZM2 QTHR
VIC: Peter Mitchell, VK3ANX QTHR
QLD: Ken Ayers, VK4KD QTHR
SA: Bill Mitchell, VK5JM QTHR
WA: Syd Jenkins, 147 Fagan St, YOKINE, WA
TAS: Andrew Boon, VK7AW QTHR

SIMPLIFIED GUIDE

AIM

1. To provide the ordinary amateur radio operator who has no WICEN training with a simple guide to emergency communications for use when caught up in an emergency or disaster situation.

NEEDS OF EMERGENCY

2. This guide is devoted to the situation where the amateur operator has to bridge a gap in normal communications in a hurry. He then is linking an emergency site or disaster area with the "outside world" and its normal communications.

OPERATOR ACTIONS

3. The amateur operator should call on the most suitable band, on the WICEN designated frequencies listed below to achieve initial contact. If no contact results use any frequency in use to stimulate a reply.

4. He should declare his call an emergency call by one of the pro words below and should not be discouraged if he receives replies from anywhere but the desired direction, for skip may preclude the direct path and relay procedure may need to be employed.

RESPONDING STATION ACTIONS

5. Responding stations should answer an emergency call but relinquish "hold" if a more direct circuit or link can be arranged; however they should remain on listening watch and monitor the circuit.

JANUARY'S BEST PHOTOGRAPHS



This month the judges were divided in their choice for the best photograph.

AGFA-GEVAERT selected the "TV Interview" set of photos on page 17.

Waverley Offset Printing Group selected "Erecting the Tower" on page 24.

Whilst Quadricolor Industries Pty Ltd selected "Barry Jones" page 30.

These photographs will now be considered for the AGFA camera prize at the end of the competition in June 1984.



QSP

APPROVAL

The Department of Communications, as a result of negotiations with the WIA, have approved Morse code transmissions to be used by combined limited/novice operators on all bands within the terms of their licence as from the 9th December, 1983.

AR

Believe it or not

The manufacture of valves by Siemens is increasing at about eight percent each year.

From Break-In, November 1983

AR

EMC

(Electro Magnetic Compatibility)



If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

FORWARD DETAILS TO

VK3QQ,

Federal EMC Co-ordinator, QTHR.



POUNDING BRASS

Marshall Emm, VK5FN
GPO Box 389, Adelaide, SA 5001

MORSE CODE EXAMINATIONS

We've a lot of ground to cover this month — first some procedural information for first-time amateur candidates, some comments on the technical aspects, and finally some information on the other Morse exams conducted by the Department of Communications. My sincere thanks to Mr Lindsay Labutte of the Examinations Section for his kind assistance.

According to my calculations, this should appear in "Amateur Radio" in early February. It's early October now, so you can see why some calculation is necessary, but with any luck, those of you who are about to sit for the Department of Communications' Morse Code Examination for the first time will have a chance to read this and, I hope, be a little better prepared.

First of all, some of you will need reassurance that the examiners are there for one reason only — to determine whether you can send and receive code. They are not there to keep you from becoming an amateur, or to intimidate you, or to enjoy themselves at your expense. If you can in fact send and receive code at the required speed, you should have nothing to worry about except perhaps a small case of the jitters. And if you followed the advice I gave you a couple of months ago, you got your speed up to three or four words per minute faster than they are going to throw at you, so you have a bit of allowance in hand for "nerves".

Now the big day has arrived, and you are wondering what it will be like. Let's tackle the receiving test first. You will probably be given a pair of headphones with no cord. That's alright, no cord is necessary, because the signals are actually transmitted by radio to a small receiver built into the headphones. Most examinations nowadays make use of the receiver headphones.

You will be given ample opportunity to make yourself as comfortable as possible and arrange your paper and writing implement (you do have a spare, don't you?), and then you will be given approximately two minutes of practice code. The practice material is sent at exactly the same speed, with the same pitch and tone, as the actual exam. Listen carefully, first to see if you have any trouble hearing what is sent, and secondly to see how well you can copy it. Write it down, and pretend it is the real thing — it is the last chance you'll get for a bit of "study".

One last thing to do during the practice is to move your head around as you copy, to see what effect this has on the received signals. The system uses very low power, and the antenna in your headphones is directional, so you should make sure that you will still be able to hear in any position you are likely to get into during the exam itself.

At the conclusion of the practice material the examiner will stop the tape and make sure everyone is ready to take the exam. If you

have a problem with hearing the signals, speak up now. Do not hesitate if there is a legitimate problem; it will not be held against you.

Once everyone has indicated that he is ready, the exam is on, and nothing will stop it unless the tape breaks, or the ceiling falls in, or war is declared — so be ready! You should concentrate utterly on each and every character as it is sent, without paying any attention to whether it makes sense as text. Somewhere in the course of the exam there is bound to be a group of letters which seems impossible, and if you try to work it out you risk missing the following letters. Everybody knows, for example, that the letter "Q" is always followed by the letter "U". Well, you should have seen the looks on people's faces the time the exam started with the word "QANTAS". If you must read it as you copy, bear in mind that there is no punctuation.

What you write is just as important as what you hear, so by all means be careful in writing it down. You can write in cursive script, but if you do, please ensure that your "a's" and "o's" cannot be confused. It is probably best to print in block letters, and be careful that you have properly recorded the space between words.

For some reason a lot of people seem to think they have a chance of passing the exam just on luck; others have no expectation of passing it till next time, but want to see what it's like so they'll be better prepared. Whatever the reason, you will probably hear pencils hitting the table, and sounds of disgust, beginning about ten seconds into the exam. Ignore them — any lapse in concentration is likely to be fatal.

The sending examination is a different kettle of fish. For one thing, you have the examiner all to yourself, usually sitting right across the table from you. If this is a real problem for you, feel free to tell him the problem and he will probably be quite happy to move out of your line of sight.

You are allowed to use your own key, if you wish, and if it is a normal "straight" key. If you use the key provided, you will find that it is a very good key, and you are allowed to adjust the contact spacing and spring tension. You are given some material to practice sending as a warm-up, and you can always stop and readjust the key (during the practice, that is) if it doesn't suit your sending style.

Most people find the sending easier than the receiving, and that is only natural because when sending you can read ahead and know what is coming, which gives you that much more time to translate the written characters into code characters. But there are three seemingly trivial aspects of the exam which can hurt. You must begin with the commencing signal (CT). You must conclude with the finishing signal (AR). And you must

correct mistakes in the proper fashion. For the record, if you make an error, as soon as you recognise that you have made it you should send the error signal (eight dots) and go back to the beginning of the last correctly sent word. This may seem time consuming, but you are in fact allowed extra time if you correct an error in the proper format. Absence of the CT or AR symbol will cost you a point, as will failing to correct an error; correcting an error improperly will cost you a point and a lot of time.

The examiners are not amateurs, nor are they all ex-telegraphers, so don't try to impress them with speed. They may not be able to copy more than about fifteen WPM themselves, and they have every right to ask you to slow down in the unlikely event that you can send faster than they can copy.

Now, for those who are interested in such things, some technical information about the receiving exam tapes. The tapes for the five and ten WPM exams are created using a computer, because the five WPM material consists of characters sent at an ITU speed of eight WPM, with additional space added between characters and words. Similarly, the ten WPM exam consists of twelve WPM characters spaced out to an effective ten. This works in your favour because it gives you more time to think between characters. The ratio of letter to word spacing is three to seven.

Each number counts as two characters, so there are a total of 125 characters in the five WPM exam, and 250 in the ten WPM exam. There is no fixed numeric content, but exams will generally include at least four numerals.

An examination at fourteen WPM is available on request, and is very useful for amateurs intending to apply for a license in some foreign countries. It is sent as standard ITU Morse at fourteen WPM with no additional spacing.

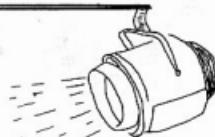
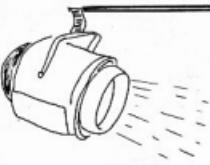
The Department does conduct other code exams. For the time being they will conduct exams at twenty five and twenty WPM for the First Class and Second Class Commercial ticket for re-validation purposes only. The only other exam for a currently available qualification is the Radiocommunication General Certificate of Proficiency (Telegraphy) exam, which requires the candidate to copy text including punctuation at twenty WPM, and mixed code groups (letters, numbers, and punctuation) at sixteen WPM. It is worth noting that in the sending portion of this exam, "a candidate who leaves an error uncorrected or who does not satisfy the examiner with his spacing and formation, will fail."

Maybe we don't have it so bad after all! Best of luck, and BCNU.

SPOTLIGHT

ON

SWLing



Robin Harwood, VK7RH

5 Helen Street, Launceston, Tas 7250

One of the exciting thrills that a shortwave listener has, is hearing a signal of a station or an operation on a new or unlisted frequency or at unusual times. Naturally, we can predict fairly well these days the right times to have propagation, yet more often than not, one has an opportunity to intercept signals at times variant to the predictions. It simply often is the case of being present at the right time.

Sometimes we are indeed fortunate hearing an exciting event via our shortwave frequencies. One event that is still fresh in our minds at the moment was the amateur radio operation aboard the Space Shuttle "Columbia" in late November early December of last year. One of the astronauts aboard this particular flight, Owen Garriott, held an amateur license and did plan to be operational for a very limited period each day. The channels he was planning to monitor were listed in many amateur radio journals as well as his downlink frequencies.

After the "Columbia's" flight settled down into its orbits, amateurs began to monitor the pre-arranged channels to try and work Owen on the space shuttle. We were informed that there was going to be an automatic tape recording recording any calls monitored, if Owen became tied up with his duties on the "Columbia". So there were many amateurs about who transmitted their calls up to the Space Shuttle, hoping that they would be recorded. However, as the flight progressed, no signals were observed here in Australia. Many amateurs set up field stations hoping to

work Owen as he passed over Australia. Also the media sent out teams of reporters to cover the story. We were aware that Owen was operational as re-broadcast of his contacts over the States were copied from W5RRR on 15 and 20 metres. This call was at the Johnston Space Centre in Houston.

Therefore on the Monday evening, after the disappointment of the Sunday's passes, some commenced scanning across 144 MHz just in case there had been an error in print. One local amateur, who only a matter of days previously obtained his call, accidentally programmed the wrong frequency into his Kenwood. Greg Frith, VK7ZPG got a shock when he heard Owen Garriott, W5LFL working the VK1 tracking station radio club on 145.75 MHz. Fortunately, he quickly alerted other local amateurs over the VK7RAA repeater so others were able to hear the signals from the Space Shuttle.

The signals were excellent, being noise-free and full scale deflection on the S-Meter. W5LFL was reportedly only operating on 4 to 5 watts FM. The contact monitored seemed to be pre-arranged with the Orval Valley tracking station in the ACT. From what I have been able to ascertain, the majority of his QSO's were in this category eg: with King Hussein, JY1 in Jordan, ARRL Headquarters etc.

Naturally, Owen just did not have time to work the many thousands ever eager for another amateur first. Particularly in Japan, the amateurs were extremely keen to have a QSO, so much that there was some friction on

air between various amateur groups. According to a "Media Network" report via Radio Netherlands, there were newspaper editorials berating the Japanese amateurs for their poor behaviour on air.

But some were very fortunate indeed to have actually been able to listen in to the contacts between W5LFL aboard the Space Shuttle "Columbia" and terrestrial stations. Incidentally Greg, VK7ZPG happens to be the son of Peter, VK7PF, well known for his activities with the OSCAR satellites, and is only 15. The signals were so clear that we were able to play them over the local media outlets to publicise our local amateur radio activities.

Just idly tuning across the shortwave frequencies can be sometimes very rewarding. Often you may come across an unexpected signal or scoop. Recently, I was indeed fortunate in hearing the "HMS Invincible" communicating with both Sydney and Melbourne Air Traffic Control. The British aircraft carrier was on a goodwill visit to Australia and was at the time engaged on joint manoeuvres with our own Naval forces off Mallacoota, Victoria. The "HMS Invincible" is of course well known because of its operations in the Battle of the Falklands in 1982.

Well, that is all for this month. Don't forget that the M-84 broadcasting period commences on the 3rd of March, which also coincides with the end of Daylight saving. I hope that you will have plenty of DX and do look forward to hearing from you. 73 from Robin VK7RH.

AR



QSP

AMSAT-OSCAR

Operation through AMSAT-OSCAR 10 has become an important communications resource for amateur radio on a worldwide scale. To keep pace with this exciting new resource it is necessary to educate users and potential users on proper satellite operating procedures.

The most important operating procedure and the one that is abused the most, is regulating users' uplink power. AMSAT has now set the guidelines for maximum uplink power levels for both Mode B and Mode L transponder operation.

Preliminary power levels that have been published prior to this notice are now changed to the following:

Mode B

The maximum user uplink power should not exceed 500 watts EIRP. This would be

approximately 300 watts ERP. It is possible to access the satellite with as little as 10 watts into a 10 dBi gain antenna when the uplink power levels are not exceeded.

AMSAT requests that UTC Mondays be set aside for QRP operating using no more than 100 watts EIRP. During these QRP periods the transponder can accommodate more users and the weaker signals can be heard without degradation of signals. AMSAT and ARRL ask that users make every day a QRP day.

The users who violate the satellite operating procedures only discourage others from communicating with them. Violators can easily be identified because their signals will be stronger than AMSAT-OSCAR 10's beacon. Excessive uplink power only makes the weaker signals disappear and weakens the signals of those who are making an effort to communicate properly.

Mode L

The Mode L transponder is not operating as well as expected possibly because the spacecraft 1269 MHz receiver cannot be switched from the omnidirectional antennas. The exact reasons for the poor performance have not

been fully determined. Nonetheless, a high amount of uplink power is required.

Currently, the AMSAT recommended uplink power level for Mode L is 25 kW EIRP. This present condition may eventually be remedied; an engineering investigation is being conducted by AMSAT.

We will try to keep you informed of the latest recommended AMSAT operating procedures. Both ARRL and AMSAT thank you for your assistance.

Bernard D Glassmeyer, W9KDR,
Satellite Programme Manager.

AR

STRAYS

It would appear that the first VK ever to QSO 'G' land on 10 metre phone was Roy Belstead, VK4EI. This occurred in Townsville, Queensland in 1934. Power in those days was limited to 25 W input — and, with the general efficiency obtainable, AM mode antenna power might have been around 10 watts.

If anyone knows of a VK to G 10 metre AM phone QSO, prior to this date, please advise Alan, VK4SS.

Alan Shawsmith, VK4SS



AMSAT AUSTRALIA

Graham Ratcliff, VK5AGR
9 Homer Road, Clarence Park, SA 5034

NATIONAL CO-ORDINATOR

Graham Ratcliff, VK5AGR

INFORMATION NETS

AMSAT AUSTRALIA

Control: VK5AGR

Amateur Checkin: 0945 UTC Sunday

Bulletin Comments: 1000 UTC

Winter: 3.680 MHz

Summer: 7.064 MHz

AMSAT PACIFIC

Control: JA1ANG

1100 UTC Sunday, 14.305 MHz

AMSAT SW PACIFIC

Control: W6CG

2200 UTC Saturday, 28.878 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

Contributions this month have been received from Bob VK3ZBB, Colin VK5HI, AMSAT Telemail and the UoSAT Bulletin.

STS-9 SPACE SHUTTLE MISSION

Own Garriott, W5LFL's "HAM-IN-SPACE" operations during the STS-9 mission in early December were a great disappointment to most amateurs throughout the world. Unfortunately, only a handful of amateurs and a select few dignitaries had the opportunity to have a two-way contact with Owen aboard the Space Shuttle Columbia. The dignitaries included US President Reagan, King Hussein of Jordan and a group from the Orroral Valley Tracking Station in Canberra, which consisted of the US Ambassador, Robert Nesen, Senator Jake Garn, a member of the NASA appropriations committee and NASA's Australian representative Dr Joseph Kerwin who is a former astronaut.

On Monday night, 5th December, operating from the Deakin Switching Centre using the callsign VK1ORR, the group of amateurs from the Orroral Valley Tracking Station successfully demonstrated that an emergency backup communication could be arranged between the Space Shuttle, Columbia and mission controllers in Houston, Texas using a circuit consisting of an amateur link on 2 metres and an international telephone link.

Many amateurs in Australia were fortunate enough to stumble across this contact on Monday night on 145.75 MHz. The signals received from Owen's handheld running 5 watts to a ground plane mounted in cargo bay were Q5 with full quieting at most locations.

For the thousands of dedicated amateurs who attempted to contact Owen aboard Columbia some hope of recognition of your

efforts still remains, in that Owen made a number of tape recordings of signals copied from the ground during the flight and these are to be analysed and those callsigns recorded will be published in 'QST' in the near future.

Any Australian who was fortunate enough to copy the QSO between Owen and the group in Canberra can obtain a special QSL card from 'STS-9 SWL Report' ARRL, 225 Main Street, Newington, CT 06111, USA (include sufficient funds to cover return postage).

For those interested in a special philatelic cover from the Solomon Islands commemorating STS-9 mission please refer to 'AR' December, 1983, page 44 for further information.

UoSAT BULLETIN

In the June, 1983 issue of 'AR' Bob VK3ZBB included a printout of UoSAT Bulletin-19 to demonstrate the amount of useful information it contained. This month I have included a printout of UoSAT Bulletin-56 to show the increased amount of information that is now contained in the weekly up-dated bulletin which is transmitted each weekend on UoSAT OSCAR-9's beacon on 145.825 MHz NBFM using 1200 Baud ASCII. The ASCII format is 7 bit word, 2 stop bits and even parity. The AFSK uses the Kansas City tones of 2400/1200 Hz.

For those interested in decoding this bulletin, a PCB is available for the 'UoSAT decoder' published in the May, 1983 issue of 'Wireless World'. The cost of the PCB is \$14 and is available from 'AMSAT Australia', GPO Box 1234, GPO Adelaide, SA, 5001. Reprints of the 'Wireless World' article are also available from 'AMSAT Australia' for a SASE.

UoSAT BULLETIN-56

UoSAT-B SPACECRAFT STATUS

Construction of the UoSAT-B prototypes and flight components continues apace at the University of Surrey, in the USA, Canada, etc! All prototype PCBs have now been laid out and all outstanding boards except two have now been returned for population. The effects of the Christmas holiday at many of our suppliers could delay the final construction of a number of boards and the outstanding service by some has been excellent.

Detailed specifications of the UoSAT-B spacecraft will not be posted until they have been finalised in flight version; data on the primary systems will appear first sometime in January, followed by the experimental systems as our workload permits. The primary spacecraft systems will, however, be nearly compatible to those on UoSAT-1, so little work will need to be done on existing ground hardware for the new craft. The telemetry format, whilst similar, will have changed channel allocations and calibration equations, so software modifications will be necessary.

Fifty Ni-Cad battery cells have been delivered to Ottawa for evaluation, a flight pack and a flight spare pack of 10 cells have been selected and are currently being evaluated for tests and matching. The flight cells are currently being shipped to Surrey for mounting in a pack and integrating with the spacecraft framework. The flight spares will be cycled after launch to simulate the cells on the spacecraft and to allow experimental measurements to be made. When the battery selection is complete, a report of their findings on Nickel-Cadmium battery selection and testing will be

produced; this is likely to be of interest to a wide range of Ni-Cad users.

The Canadian group would like us to stress that they are also closely affiliated to the VITA (Volunteers in Technical Assistance) organisation, and that the work which they are doing for UoSAT-B and PACSAT is of great importance to that organisation as well as the radio amateur service.

• Artwork for the CCD and radiation/particle detector memory boards is complete, and boards are working. The particle wave counter/ correlator board has also been tested. Complete testing awaits the memory readout boards, which have been laid out.

• The 1600 computer is progressing well. The CPU, main I/O board and 4116 memory board are running well. The Digitalizer speech synthesiser board is under test and working, if not yet perfect. Software production has now begun, using an in-circuit emulator with memory-map facilities to replace the 4116 board. Minor compilations with some of the I/O Ports when driven by the emulator have held up some of this development, but the fault was traced to a bug on the I/O board which has been corrected.

• The CCD camera analogue and digital PCBs have been laid out. Both analogue and digital sections have been tested separately and the two sections have now been connected. Minor problems with some of the very high speed circuitry have yet to be rectified and a suitable display device will be added to the camera.

• The command system prototype testing is complete, comprising the demodulators, command decoder and output latches. Some 112 commands are available to control the rest of the spacecraft. The receivers are now available for full uplink simulation and test. The antenna hybrids are being prototyped.

• Layout of all 4 telemetry system boards is complete. All four have been populated and are working well. The initial two boards contain a basic telemetry system, with the third adding frame headers and the fourth a programmable channel dwell facility. The dwell facility slows total re-organisation of any part of the telemetry frame, for use either in specialised situations for rapidly scanning a number of channels or just to confuse the listening audience!

UoSAT-1 QSL CARDS AND UoSAT-B STICKERS

At long last, the UoSAT-1 QSL cards have been received. We will attempt to send one to all individuals who have sent us a report over the past two years, however the clerical task at this time is somewhat daunting, so for a faster service, please send the UoSAT team a stamped, addressed envelope or an IRC.

A number of coloured UoSAT-2 vinyl stickers have also been produced. These will be sent to all individuals who are involved directly with the project. Others may request a sticker with their QSL card, although a second IRC or similar donation would be appreciated to cover the printing costs!

SPACECRAFT OPERATIONS SCHEDULE

The following spacecraft operations schedule is now in use:

Saturday — 1200 bulletin, telemetry, digitalizer, (2.4 GHz)

Sunday — 1200 bulletin, telemetry, digitalizer, (2.4 GHz)

Monday — 1200 bulletin, telemetry, digitalizer, (2.4 GHz)

Tuesday — Check-summed telemetry data

Wednesday — C3D imager data

Thursday — Whole orbit telemetry data scan

Friday — Load bulletin, digitalizer and telemetry schedule

The UoSAT team will be taking one or two days holiday over this weekend, so a 'normal' schedule will be resumed on Tuesday for anyone else who does not have the opportunity to listen to the spacecraft during the week.

The current spacecraft power budget requires the radiation counters and scientific magnetometer loads to be shed in order to run the 2.4 GHz beacon, currently scheduled every other weekend.

DATA TRANSMITTED LAST WEEK

The radiation data transmitted on Monday, 19th December, 1983 was recorded starting at 16:19:14 UTC.

The C3D transmission on Wednesday was taken at 14:01:29.

The whole-orbit recorded telemetry transmitted on 22nd December, 1983 was recorded starting at 16:50:05 UTC. The telemetry channels recorded were: 02, 22, 23, 30, 32, 43 and 54.

CONTESTS

VK5 wins 1983 RD Contest



Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

FEBRUARY

4.5 French 40 metre Phone
11-12 John Moyle National Field Day
11-12 NZART National Field Day
11-12 Dutch PACC Test
11-12 YL/OM Phone Test
18-19 ARRL DX CW Test
18-19 YL/OM ISSB Phone QSO Party
25 73's World RTTY Test
25-26 CQ WW 160 metre CW
25-26 RSGB 40 metre CW
25-26 YL/OM CW Test

MARCH

1 St David's Day Special Event Station
3-4 ARRL DX Phone +
10-11 QCWA Phone QSO Party
17-18 YL ISSB CW QSO Party
17-18 BARTG RTTY Test +
24-25 CQ WW WPX SSB Phone Test

APRIL

7-8 Polish CW Test +
14-15 Polish Phone Test +

MAY

26 CQ WW WPX CW Test

NOTE: The + signifies an unconfirmed contest.

RULES FOR JOHN MOYLE

NOTE: The change to Rule 19JMNFD.

CONTEST PERIOD From 0300 UTC 11th Feb 84 to 0500 UTC 12th Feb 84.

OBJECT: To encourage portable operation on all bands by radio amateurs in VK and P2.

CALL AREAS Shall be defined as:

(a) Within one's call area, VK2 to VK2, VK4 to VK4 etc.
(b) Outside one's call area, VK2 to VK4, VK6 to ZL etc.

RULES

1 In each division there are ten sections.
(a) Portable field station, transmitting phone, solo operator.
(b) Portable field station, transmitting CW, solo operator.
(c) Portable field station, transmitting open, solo operator.
(d) Portable field station, transmitting phone, multi operator.
(e) Portable field station, transmitting open, multi operator.
(f) Portable field station, transmitting HF open, solo operator.
(g) Portable field station, transmitting HF open, multi operator.
(h) Portable field or mobile station, transmitting VHF.
(i) "Home" transmitting stations.
(j) Receiving portable and mobile stations.
2 In each division, 6 or 24 hours, the operating period must be continuous.
3 Contestants must operate within the terms of their licence.

4 A portable field station is defined as one which operates from a power supply which is independent of any permanent installation. The power source must be fully portable, ie batteries, solar panels, motor generators/alternators etc.

5 No radio apparatus, including masts, antennae, feeder cable etc, may be erected on the site more than twenty-four hours before the contestant begins operating.
6 All amateur bands may be used, but cross band operation is not permitted.

Note: By gentlemen's agreement, we are refraining from using the 10 MHz band.

7 Cross mode contacts are permitted, and count single.

8 The size of any portable field station shall be restricted to approximately that of an 800 metre diameter circle.

9 Each multi-op transmitter should maintain a separate log for each band. An FM rig may be separate from an AM or SSB rig, but only one multi-op transmitter may operate on any one band at any one time.
10 All multi-operator logs should be submitted under one callsign.

11 RS or RST reports should be followed by serial numbers, beginning at 001 and increasing by one for each successive contact.

12 SCORING FOR PORTABLE FIELD STATIONS AND MOBILES:

(a) Portable and mobile stations outside entrants call area — fifteen points.
Portable field stations and mobiles within entrants call area — ten points.
Home stations outside entrants call area — five points.
Home stations within entrants call area — two points.
(b) When a foreign portable station is worked, the contestants must determine whether or not the station worked is portable in the strict sense of the contest — see Rule 4.

13 SCORING FOR HOME STATIONS.

Portable field stations and mobiles outside entrants call area — fifteen points.
Portable field stations and mobiles within entrants call area — ten points.
No points are scored for home stations working other home stations, whether in entrants call area or foreign.

14 Portable field stations may contact any other portable field station on ALL bands repeatedly, provided that at least four hours have elapsed since the previous contact with that station. Portable field stations may contact any home station only once on each band and mode. Note that AM, FM, SSB and any other voice modes are grouped together as PHONE.

15 Operation via active earth repeaters or translators is not acceptable for scoring. However, contacts via extra-terrestrial repeaters, eg satellites, EME is acceptable for scoring. Contestants should note Rule 6.

16 All logs shall be set out under the following headings:

Callsign, band emission mode, RST/serial sent, RST/serial received, date-time in UTC, points claimed. Contacts must be listed in chronological order. There must be a front cover sheet showing the following:
Name, address, division, section, callsign, callsigns of operators (for multi-op entrants), location of station, equipment used, power supply used. Contestants in all sections shall also include a "zero-value contacts list", showing all contacts made that were of zero-value, ie contravened the rules. This list shall be set out under the same headings as for the contestants logs. Contestants must also certify that they have operated in accordance with the rules and spirit of the contest. It should be noted that the practice of multi-op station participants considering themselves to be portable stations and making regular contacts with the portable field contest station so as to bolster that station's score is deemed to be not in the spirit of the contest, and as such contravenes Rule 16.

17 Certificates will be awarded to the winner of each section, in both the 6 or 24 hour divisions. The 6 hour certificates cannot be won by the 24 hour entrants.

18 Entrants in sections (a) through (h) inclusive must show how their power was derived, in accordance with Rule 16.

19 There is a bonus multiplier to be used in the case of CW-CW contacts. These count double.

20 Logs must be received no later than 23 March 1984 and sent to PO Box 236, Jamison, ACT 2614.

RECEIVING SECTION

This section is open to all short wave listeners in VK and P2. Rules are the same as for transmitting stations, but do not have to show RST/serial of that station being worked by the portable or mobile field station. Logs must show the callsign of the portable or mobile station heard, the report and serial number sent by that station, and the callsign of the station called. Scoring is as shown in Rule 13. A station calling CQ does not count — only portable and mobile stations, which must be listed in the left-hand callsign column of your log, will count for scoring. Stations in the right-hand column (if available) may be any station contacted.

A certificate will be awarded to the highest scorer of each of the 6 hour and 24 hour divisions, individual or multi-operator entries.

The decisions of the FCM are final and no correspondence will be entered into.

ST DAVID'S DAY SPECIAL EVENT STATION

The St David's Day Special Event Station will again be operational on the 1st March, 1984 to celebrate the National Day of Wales.

The established popularity of the event is

evident from the volume of contacts made during the 1983 celebrations, when again over 1000 QSOs were made in 24 hours.

Amateurs world wide are again cordially invited to contact the Special Event Station which will be operational from midnight Wednesday 29th February, to midnight Thursday 1st March, 1984. Activity, conditions permitting, will be on all HF and VHF amateur bands.

All QSOs will be acknowledged with the Special Event Card, and also to reports sent in by short wave listeners.

A very attractive award is available to radio amateurs who make contact with the Special Event Station on St David's Day and five other Welsh amateur stations during the months of February and March 1984.

To claim the award, you should send copies of your log sheets, along with six IRCs, or POCs, cheques, money, to the event Coordinator, (see below) who will then pass your claim on to the QSL Manager.

The distinct Welsh flavour will no doubt be present in the day's proceedings, and as always enthusiastic amateurs will be pleased to make contact. The intention, along with celebrating St David's Day, is to promote goodwill, friendship and understanding between countries of the world.

Co-ordinator RR Jones, GW4HQ, Bryn-Ynys, Strawberry Place, Morriston, Swansea, SA6 7AG, Wales, UK.

NZART NATIONAL FIELD DAY

RULES — When? From 1500 hours on Saturday 11th February to midnight the same day and then from 0600 hours Sunday 12th February to 1500 hours the same day. Phone or CW may be used on 80/40 metres. Simultaneous operation may be used by any F/D station on 80 and 40, but no simultaneous operation of CW and phone; CW and CW; or phone and phone may be used on one band. All equipment must be under the same shelter. Only ONE receiver/transmitter may be in operation on any one band at any one time. (a) Contacts with any one station permitted twice each hour on each band provided that one contact is on phone and the other is on CW, and provided also that some other station is contacted between the two QSOs. NOTE: "Each hour" means between the even hours such as 1600-1700; 1700-1800 etc. (b) It is not permissible to QSO the same station "twice running" eg at the end of one hourly period and at the beginning of the next. A different station must be contacted before the previous station can be contacted again. (c) EXCEPT that this is permissible when one of the two stations concerned has contacted a different station between the QSOs concerned or when there is a time delay of at least five minutes between the contacts. F/D stations may contact other F/D stations as well as DX stations (this "DX" group will hereafter be called the "Overseas Group"). Home stations are not permitted to arrange schedules or in any way to aid F/D stations to make contact with overseas stations or with ZL stations.

CYPHER EXCHANGES — (a) The cumulative numbering system will be used with the addition that F/D stations will add their Branch number — eg ZL2VL operating F/D would give the cypher 579001/11 — in

which 579 is the report; 001 the contact number; and 11 the Branch number. (b) Where simultaneous operation is used, separate cyphers will be used for each band, each beginning with 001.

SCORING — Note: (1) No phone to CW contacts permissible. (2) F/D stations belonging to the same Branch may contact each other for scoring purposes only but NOT as a multiplier. (a) Contacts with other F/D stations on phone — three points, (b) Contacts with other F/D stations on CW — five points, (c) Contacts with the "Overseas Group" phone or CW — ten points.

"THE MULTIPLIER" — A multiplier is earned for each Branch worked on phone and on CW on each band — thus giving a possible multiplier of four from the one Branch worked on phone and on CW on both 80 and on 40. (If the one Branch was worked on phone on 80 and on both CW and on phone on 40 — then the multiplier would be 3.)

FINAL SCORE — Will be the sum of the points on both bands multiplied by the "multiplier" as defined above. This is set out for easy use on the Summary Sheet.

LOGS — ONE log with contacts in order of time except where simultaneous operation is used in which case separate logs must be submitted for each band. Entries to be in this order — date/time/station contacted/CW/ph/band/cypher sent/cypher received/pts. Head each page with call and number. Underline each contact which is a NEW multiplier — eg different Branch F/D station. Underline the WHOLE entry — callsign/reports etc, etc. **CHECK FOR ACCURACY**. Use separate sheet of log paper for each hour and this must be signed by the operator concerned (NOT the log keeper) and his personal callsign stated. It is recommended that this operator be responsible for checking this section of the log. (NB — if only a few QSOs, rule off after hour and sign each section.)

SUMMARY — (a) Callsign of the F/D station. (b) Name and number of the Branch. (c) Section in which competing (see Rule 12). (d) Names of operators as required on summary sheet. (e) Number of F/D contacts on 80 phone. Number of F/D contacts on 40 phone. (f) Number of F/D contacts on 80 CW. Number of F/D contacts on 40 CW. (g) Number of "Overseas Group" on 80. Number of "Overseas Group" on 40. (h) Multiplier claimed for 80 phone. Multiplier claimed for 40 phone. Multiplier claimed for 80 CW. Multiplier claimed for 40 CW. (i) Total points claimed. (j) Brief outline of equipment used and power input to final amplifier. (k) Certification of power input and observance of all rules to be signed by TWO operators (except in case of single operator stations). (l) On special sheet supplied by NZART HQ/ Branch Sectys/Contest Manager — list callsigns of multipliers claimed as set out on the sheet.

LOGS — Should be posted to reach the Contest Manager ZL2GX, 152 Lytton Rd, Gisbourne NZ.

RESULTS OF 1983 REMEMBRANCE DAY CONTEST

Well finally the results of the RD Contest are

available after a long wait. I purposely delayed the results of the contest to allow the mail strike affecting the ACT to finish and to cover the vast majority of logs to arrive.

Luckily for some people, as there were some late entries (posted late that is) that were accepted for the contest. Only one entry that arrived far too late from Tasmania was not included in the results, my apologies for that omission but all the compilations had been completed and it was not possible to take this one into account. I might mention that the entrant had not posted the entry until his return from a holiday after the test.

SOME COMMENTS ON THE LOGS AND THE PRESENTATION OF THEM

Firstly let me apologise for the omission of the sample log, this had been taken out of the copy for a refurbish and unfortunately left out of the final copy. However almost every log submitted was in the correct format, thank you.

The front cover of the log is most important and it will assist both yourself and the contest manager to correctly assess your score if the following format is remembered for all future contests:

Name of Contest:

Callsign:

Section Entered and Prefix (spell it out):

Score claimed:

Name and Address:

Declaration (missing on a lot of entries):

Log Summary:

PAGE	No of TOTAL PAGES	PAGE SCORE	TOTAL SCORE
1	20	39	729
2	-	38	-

Although this seems to be repetitive it will allow both yourself and the manager to ensure that you have included all the log sheets and that the total is correct.

From the comments on the logs (printed later) and the results of the sections, it is very obvious that the participation factor in the CW/RTTY section has fallen dramatically since the introduction of one point per contact for that section. To increase the participation in that section it seems necessary to increase the scoring of the contacts to double points for each contact. This will hopefully improve the entries and help to generate some further interest in these modes of communications.

When an entry was received it was checked for a desired section to be entered into, if this was not found the entry was put into the open section (d), and the entrant then competes for the honours in that section.

No entries were disqualified, although some of the presentations deserved to be, the number of well presented entries certainly offset the bad ones. However there is a new contest manager next year and he may take a different view.

The winners are VK5 and they deserve a very hearty congratulations for the excellent effort in organisation and participation throughout the division.

THE RESULTS SECTION SCORE

VK1	VK2
A Phone	4967
B CW/RTTY	311
C SWL	325
D Open	880
Clubs	35
Total Score	6518
	Total Score
	12239

VK3		VK7		Novices and country operators are not even in the race — novices are even further handicapped with only three bands and low power. It is little wonder that there is increasing disenchantment with the RD when the regulations favour high power (HF and VHF) city operators.		II		116		BQB	
A Phone		13625		A Phone		5034		QL		100	
B CW/RTTY		736		B CW/RTTY		339		BHO		75	
C SWL		377		C SWL		119		AZR		64	
D Open		1354		D Open		1336		GT		57	
Clubs		1405		Clubs		701		PNQ		51	
Total Score		17497		Total Score		7410		SU		50	
								BNL		46	
								BRC		38	
								JM		30	
								DID		24	
								VM		22	
								Total		987	
								AMO		12	
								BKU		65	
								VK3 SECTION B		VK3 SECTION B	

VK4		VK8		VK8		1727		Novices and country operators are not even in the race — novices are even further handicapped with only three bands and low power. It is little wonder that there is increasing disenchantment with the RD when the regulations favour high power (HF and VHF) city operators.		II	
A Phone		5938		A Phone		5034		QL		100	
B CW/RTTY		749		B CW/RTTY		339		BHO		75	
C SWL		—		C SWL		119		AZR		64	
D Open		1782		D Open		1336		GT		57	
Clubs		1544		Clubs		701		PNQ		51	
Total Score		17497		Total Score		7410		SU		50	
								BNL		46	
								BRC		38	
								JM		30	
								DID		24	
								VM		22	
								Total		987	
								AMO		12	
								BKU		65	
								VK3 SECTION B		VK3 SECTION B	

VK5		VK6		VK9		1727		Novices and country operators are not even in the race — novices are even further handicapped with only three bands and low power. It is little wonder that there is increasing disenchantment with the RD when the regulations favour high power (HF and VHF) city operators.		II	
A Phone		29078		VK9		1727		Novices and country operators are not even in the race — novices are even further handicapped with only three bands and low power. It is little wonder that there is increasing disenchantment with the RD when the regulations favour high power (HF and VHF) city operators.		II	
B CW/RTTY		1116		VK9		1727		Novices and country operators are not even in the race — novices are even further handicapped with only three bands and low power. It is little wonder that there is increasing disenchantment with the RD when the regulations favour high power (HF and VHF) city operators.		II	
C SWL		994		VK9		1727		Novices and country operators are not even in the race — novices are even further handicapped with only three bands and low power. It is little wonder that there is increasing disenchantment with the RD when the regulations favour high power (HF and VHF) city operators.		II	
D Open		2589		VK9		1727		Novices and country operators are not even in the race — novices are even further handicapped with only three bands and low power. It is little wonder that there is increasing disenchantment with the RD when the regulations favour high power (HF and VHF) city operators.		II	
Clubs		2543		VK9		1727		Novices and country operators are not even in the race — novices are even further handicapped with only three bands and low power. It is little wonder that there is increasing disenchantment with the RD when the regulations favour high power (HF and VHF) city operators.		II	
Total Score		36320		VK9		1727		Novices and country operators are not even in the race — novices are even further handicapped with only three bands and low power. It is little wonder that there is increasing disenchantment with the RD when the regulations favour high power (HF and VHF) city operators.		II	
								VK9		1727	
								VK9		1727	
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VC	14	YX	150	PN	10	AUS	91	NND	18	HD	280
VJD	10	AQ	142	Total	29078	CZ	89	Total	3035	QF	222
ZN	10	TW	141			PV	66			KIH	200
Total	5938	ZH	134	VK5 SECTION B			85	VK6 CLUB SECTION			1336
VK4 SECTION B		NHE	133	BN	182	QP	80	AAE A	1052	VK7 CLUB SECTION	
XA	245	KV	131	AFX	170	DY	78	ANW A	752	QF	222
OR	174	KRC	121	VW	162	DC	76	ML A	317	KIH	200
FB	94	KLH	120	UM	150	QN	73	WH A	281	WN	164
HH	81	PKW	118	ATU	135	NPL	72	ACG A	202	SB A	41
ATW	64	ADC	115	HO	82	OO	69	VF A	200	Total	701
DXZ	46	ZLX	114	FM	77	AIIH	66	ARG A	156		
CJ	32	ZGK	113	XK	82	DN	55	PD A	56		
XJ	10	NNT	104	JG	15	PG	83	SR A	54		
Total	748	SG	104	Xi	15	AMG	61	SAA A	22		
		UY	103	BY	12	ANN	61	Total	3092	VK8 SECTION A	
VK4 SECTION C		JK	102	UH	12	KOJ	59			KRD	451
No entrants		ADV	100	AYJ	10	ARL	54			KGA	376
		BS	100	KL	10	NST	52			LO	201
VK4 SECTION D		FL	100	Total	1116	SK	52			GB	160
LT	597	ZO	100			YA	52			NTA	13
ZV	334	AVQ	99				49			NTT	13
YG	315	KAA	99				48				1727
NUN	234	ZB	90				45				
NAS	107	AMK	81				35				
ASE	84	FA	80				31				
MX	20	ATM	16				30				
LZ	20	YI	73				25				
ZU	11	LO	71				22				
Total	1782	NF	70				20				
VK4 CLUB SECTION		NXT	70				173				
AEB A	710	PJH	70				162				
WIZ A	375	ATS	69				162				
AÖH D	272	ZFT	69				160				
BTB A	187	RS	68				157				
Total	1544	RX	65				157				
		NDG	63				151				
VK5 SECTION A		FS	61				150				
CGR	1034	KBS	61				148				
NX	1006	BKG	60				147				
GR	801	DZ	60				142				
ADC	719	NEI	58				141				
FF	685	ABW	57				138				
AAS	667	DH	55				138				
FK	659	CO	52				135				
AGW	636	APD	51				133				
KAT	610	OU	51				132				
ACW	588	AGP	50				131				
AGJ	569	CA	50				130				
QX	544	EC	50				129				
ASA	541	KOT	50				128				
AWM	525	OV	50				127				
BDG	522	ZBI	50				126				
UU	489	APZ	46				125				
ZH	461	YO	46				124				
AAC	450	ATU	45				123				
NCX	445	KAE	45				122				
DO	431	RT	41				121				
NRN	427	NGA	40				120				
DJ	410	KJT	39				119				
BW	391	NPC	38				118				
YJ	391	BG	36				117				
ZKK	384	HM	36				116				
NOD	379	SN	36				115				
ZCF	379	ZX	36				114				
ZDJ	378	AIM	35				113				
AMW	352	IT	35				112				
NWS	352	IX	35				111				
KMH	342	KLD	35				110				
ZJE	331	KSQ	35				109				
DI	327	ME	35				108				
KOB	322	NOC	35				107				
NN	315	ZJJ	35				106				
ATW	312	NIB	34				105				
ATN	295	OF	34				104				
AKK	288	TY	34				103				
NSE	283	AMF	30				102				
SE	279	KEM	30				101				
RR	277	NOS	30				100				
RV	268	ZZ	30				99				
SU	250	ADN	29				98				
LP	248	KG	26				97				
AWH	230	AKC	25				96				
AJ	219	KVJ	25				95				
ZBC	209	KX	24				94				
SS	209	NEG	22				93				
AJ	202	ALM	16				92				
ABF	197	NDC	16				91				
AGE	195	NPA	16				90				
OZ	182	LC	15				89				
AJG	173	KCI	14				88				
KGI	171	API	13				87				
ABX	170	PWA	13				86				
ZN	164	AYJ	12				85				
EA	163	ML	12				84				
TP	163	NCY	11				83				
ST	162	AGR	10				82				
		PH	97				81				
		PH	97				80				

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Cat No. 5000E — Tono's new communication computer. Built in monitor. ARQ-FEC, 100's of features, write for details.

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- AC Voltmeter

\$395 + ST & P&P
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BROADBAND RF WATTMETER

- Requires no inserts
- No bandswitching
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- AVAILABLE WITH AUSTRALIAN BASED GREAT CIRCLE MAPS

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DR7500X — Medium duty, pre-set control box.

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DR7600X — Heavy duty, pre-set control box.

SWR/PWR METERS

CN410M — 3.5-150 MHz 15/150W

CN460M — 140-450 MHz, 15/150W

CNS20 — 1.8-60 MHz, X Needle

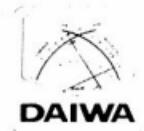
CNS40 — 50-150 MHz X Needle

CNS50 — 144-250 MHz X Needle

CNS620B — 2/200/2 kW, X Needle

CNS650 — 1.2-2.5 GHz, X Needle

THE FAMOUS DAIWA X NEEDLE

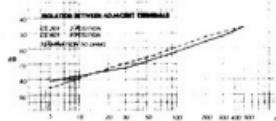


ANTENNA TUNERS

CL680 — General Coverage, 1.8-30 MHz, 200W Cont.

CNV219 — 3.5-28 MHz 100W Cont.

COAX SWITCHES



	Model CS201	Model CS-4
FREQUENCY	MAX. 600 MHz	1500 MHz Max
VSWR	Below 1:1.2	Below 1:1.2
POWER RATING	2.5 kW 1 kW CW	500W PEP 250W CW
IMPEDANCE	50 ohms	50 ohms
INSERTION LOSS	Less than 0.2 dB	Less than 0.2 dB
ISOLATION	Better than 50 dB 300 MHz Better than 45dB 450 MHz	Better than 60dB
CONNECTORS	S0239 — "N" Type	BNC
	UNUSED TERMINALS GROUNDED	
OUTPUT PORT	2 POSITION	4 POSITION

LAB. POWER SUPPLIES

PS200D — 9-15 Volts, 20 Amps, 240V AC

PS80M — 3-15 Volts, 8 Amps, 240V AC

PS300 — 9-15 Volts, 22 Amps, 240 Volts AC.

Features DAIWA X NEEDLE — Volts Amps Watts



YOUR LINK TO
WORLD TECHNOLOGY



VK4 WIA NOTES

Bud Pounsett, VK4QY
Box 638, GPO, Brisbane, Qld 4001

PRESIDENT'S REPORT 1983

The VK4 Division is still run entirely by volunteers — those stalwarts who surrender their "on air" time, to ensure that the hobby of amateur radio is protected and continues to flourish.

For myself, the 1983 year was made memorable by the opportunity I've had, to personally visit every Club in the State. The feedback from club members I have met, augers well for amateur radio.

Our hobby is caught up in the technological explosion and covers an ever increasing range of fascinating aspects — from CW to satellites — AM to post-box repeaters — a "smorgasbord" extending from MF to SHF. Every one of these, a delight to some, an obsession for the few, and *let us not forget*, every one is worthy of being defended against intruders.

Your Council has endeavoured to maintain an even-handed approach to its decisions, to ensure that the interests of all aspects of our hobby are adequately dealt with.

VK4 Council acts as a policy-making body, leaving the day to day workings of its various departments to one or another of our support volunteers.

RETIREMENTS

1983 began with the retirement from Council of

Jack Gayton VK4AGY

Fred Saunders VK4AFJ

Rod Taylor VK4YRT/NBD

Doug Charlton VK4JB

One cannot say Jack has retired from Institute affairs, as he is "VK4WIA", the originating station of the VK4 News and Information Service; and organises the band of stalwarts who bring you this service each week on nine separate frequencies. In his spare time, he collects the material and arranges the printing and despatch of 1500 copies of "OTC" each month.

Similarly, Fred has still maintained his interest in the Institute, he is WICEN Officer for the South Side of Brisbane, and often is the man behind the words of your President.

Rod also kept up an interest in his Education Portfolio, organising and arranging the "Educating the Educators" programmes which were so successful.

Doug was with us for only a few months, but we appreciated his oratory and business experience on Council.

In December 1983, Dave Laurie VK4DT decided that life was for living, and after eight years of continuous service, has decided to put aside Institute affairs, and return to family life, and a little more "on air" time. Soon after he joined Council, Dave almost immediately became President of this Division, and served in that office for several years in two terms. Since then, he has been Alternate and then Federal Councillor for many years. The Radio Club Workshop was initiated by Dave and remains a tribute to his energies.

Federal Council meetings will miss his talent for quick analysis and well chosen phrases. On behalf of the Division, I take this opportunity to thank you and your XYL, Anne, for your fine example and magnificant service.

OUTWARDS QSL BUREAU

We must all thank Mick VK4AMB and his XYL, Chris VK4ABM, who have announced their retirement from the Outwards QSL Bureau. Their devotion to the task of sorting, packing and despatch of over 60 000 cards a year will be a tough act to follow. Thank you both on behalf of the Division.

INWARDS QSL BUREAU

Dr Murray Kelly VK4AKO, his parents Pat and Melita Kelly, and their many unseen helpers very capably handled the 70 000 QSL cards despatched to Queensland licencees. Each month, several sugar bags — or "cartons" as the season demands — of cards are received and enter the sorting process.

There are the two-letter full calls, then the three-letter types consisting of full calls, K calls, Novice calls and Limited calls. Each of the five categories are further sorted alphabetically and are then ready for the final sorting.

There are cards for delivery via the Clubs, those to be collected at the General meetings, and finally, the mailing direct to individual amateurs. We are all indebted to this group of heroes who keep this facet of our hobby well and truly under control.

NEWS AND INFORMATION SERVICE

This year the Division's News and Information Service has performed extremely well. Bud Pounsett VK4QY and his XYL, Bonnie, collate the weekly broadcast from a vast variety of sources. Thank you to all who assist by spending your time to ensure that our news service is listened to and enjoyed by over 250 amateurs in VK4 each week.

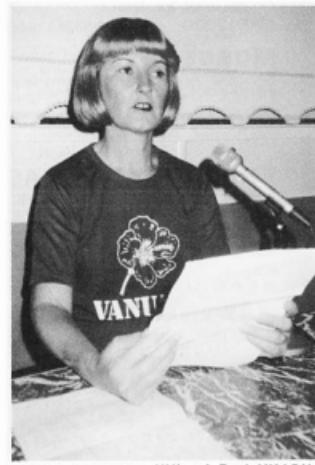
Bud also uses his network of sources to provide the interesting items which we have read in "Amateur Radio" VK4 Notes and our Divisional newsletter insert QTC.

PUBLICATIONS

Anne Minter VK4NRA has run this Division's Bookshop and has provided our members with an excellent service. Over 50% of our sales are now through affiliated clubs and this has also provided these clubs with a useful source of revenue, and a lessening of the burden of postage.

INTRUDER WATCH

Gordon Loveday VK4KAL of Rubyvale and his dedicated band of helpers have again diligently reported the many intruders on our bands. Many reports and ruined QSOs are required before administrations overseas take action and arrange to clear intruders, so your reports are always required. Please report intruders and be patient as results take time.



Bonnie Pounsett, XYL of Bud VK4QY, Principal newsreader of VK4WIA Sunday Broadcasts.

but the Intruder Watch Service has had many successes.

VHF/UHF ADVISORY COMMITTEE

Bill McDermott VK4AZM chaired this committee for part of this year and then Paul Hayden VK4ZBV returned to harness in the service of our hobby. Only two new repeaters made their debut this year (Gympie 147.100 and Ipswich 438.375) but several others are in the planning stages. Progress on the store and forward repeater of the South East Qld Teletype Group is progressing and 1984 may see it operational.

HISTORIAN

Peter Brown VK4PJ continued to collate our historical heritage and some of the gems of his research appeared in "Amateur Radio", the "Thumbnail Sketches" columns.

During the year, Peter has been assisted by Alan Shawsmith VK4SS. Alan is a well known AR journalist and has enthusiastically taken the challenge of recording the 1930s era for posterity.

Once again I urge all you pioneers of radio, not to be responsible for the loss of part of Australia's heritage. Your memories recorded on tape, your photographs clearly labelled, your books stored, and above all, ensure that your relatives know that these items are of future historical interest.

Suitable long term storage of the historical material bequeathed to the Institute is becoming a pressing problem and your Council seeks any member's suggestions in this regard.

Congratulations Peter for enthusing this Division about historical tradition.

AWARDS

John Moulder VK4YX and Trevor Knight VK4NLX of Warwick have kept the VK4 Award available. This award continues to be popular as the challenge to obtain contacts in every city and shire in this vast State of ours is no mean feat. However, no-one yet has attempted to obtain this award exclusively on VHF, and as an extensive traveller myself, I commend the idea to you.

CONTEST MANAGER

Joe Ackerman VK4AIX of the Gold Coast has efficiently looked after this task. Many amateurs, both old and new, are enthused by the special challenge of contest operating, and Joe with his years of experience in this field will next year revitalise VK4 participation.

WICEN

Ken Ayers VK4KD has, for the fourth year running, co-ordinated WICEN activities throughout the State. This year, the WICEN RTTY net has become operational and this, in the event of a disaster, will prove invaluable. Congratulations to all amateurs who participate in this service to your community.

MEMBERSHIP

Difficult economic times and the waning of the CB boom has slowed the meteoric growth to our ranks. Dave Richards VK4UG has effortlessly kept our membership records in order and has welcomed all new licencees to our bands.

COUNCIL

Your Councillors for 1983 were Harold Bremerman VK4HB, Ken Ayers VK4KD, Alan

West VK4WK, John Aarsse VK4QA, Bud Pounsett VK4QY, Don Hopper VK4NN, Theo Marks VK4MU, Bill Dalgleish VK4UB, Guy Minter VK4ZXZ, Barry Ker VK4BIK, and Ross Mutzelburg VK4AQK. During the year, Ross Marren VK4AMJ joined us and Harold VK4HB retired.

TREASURER'S REPORT

The audited financial report will appear separately in OTC. I would like to congratulate our treasurer Ross VK4AQK on his presentation of this report. Ross will also be Alternate Federal Councillor and has indicated that a new treasurer will be required in 1985.

HIGHLIGHTS OF THE YEAR

Radio Club Workshop — The 1983 Radio Club Workshop once again proved invaluable to the Federal Delegates when they attended the Federal Convention. Our thanks go to all the clubs who sent their delegates. The quality of the debates showed that they were well briefed at club level. The VK4 Policy Statements drafted at the last two Workshops have ensured that Institute thinking is looking towards the year 2000, without losing the traditions of the past 75 years. The Education Sphere — This Division can be justifiably proud of the programme, "Educating the Educators" as presented last year at Toowoomba, and this year repeated at Townsville and Rockhampton.

This course was of immense benefit to our many volunteer instructors, to enable them to improve their presentation, and the future will no doubt show a marked improvement as a direct result.

It will no doubt also benefit those who would like to lecture at club level, providing "post graduate" education, the need for which was highlighted at the Radio Club Workshop. Club Visits — As always, Council members

endeavour to visit affiliated clubs whenever possible, and this year, all regional clubs — from Mount Isa to the Gold Coast — from Cairns to Roma — had at least a brief opportunity to eyeball a Councillor. The hospitality shown by clubs and individual members amply rewarded the visiting Councillors, including those contacts made with isolated amateurs at very odd hours whilst mobile. The feedback obtained was invaluable.

However, there is no point in having a tidy shack if you have inefficient antennas!

This year has been a year in which (dare I say it?) those Southerners have done well.

The benefits of years of preparation of WARC 79 are now visible for all to see. Our new bands on 10, 18 and 24 MHz, the long awaited window on 50 MHz and the new SHF bands are all a result of hard work down South.

The Wireless and Telegraphy Act of 1905 is soon to be replaced, and Federal Executive have spent untold hours in ensuring that our hobby will be secure for the future.

In these difficult economic times, life is not very easy, and there are many challenges for us all.

I thank all of you who have helped our hobby — the net controllers who run friendly nets — elected club officers — VK4 Division volunteers — the Federal Executive. Together, all have ensured that 1983 was a successful year.

Guy Minter, VK4ZXZ
VK4 DIVISION PRESIDENT

"This report will be presented at the Annual General Meeting of the Division to be held on Friday 17th February at the Playground and Recreation Association Centre, corner of Love and Water Streets, Fortitude Valley, commencing at 7.45 PM."

AK

FORWARD BIAS

VK1 DIVISION



Members are reminded that February's meeting is our Annual General Meeting (for details see January AR).

THE VK1 AWARD

This award is issued by the WIA ACT Division, (upon receipt of a correctly presented application) to any licensed amateur operator or shortwave listener. The certificate displays one of Canberra's most distinctive landmarks, the Telecom Tower, situated on Black Mountain in the heart of Australia's Capital City. On the certificate the Tower is depicted in light blue on a white background with Award information in black lettering.

Information Required on Application

A log extract showing UTC time, date, band, mode used, call sign of the VK1 station worked and report of cipher exchanged.

SWLs should ensure they log the station worked by the VK1 station being logged.

Each VK1 station worked counts as one point and each VK1 callsign may only be worked once. Any change in a callsign constitutes another point towards the award, excluding portable, maritime, mobile etc.

Contacts made via terrestrial repeater systems are not valid for the award.

Award Requirements

Basic Award: Cost \$2.00 or 5 IRC.

20 points — VK call areas (excluding VK9-VK0)

10 points — VK9, VK0 call areas

10 points — all overseas call areas

10 points — bands above 52 MHz.

Upgrades to the basic award: Cost \$1.00 or 3 IRC.

VK call areas (excluding VK9-VK0)

Bronze — 50 points

Silver — 75 points

Gold — 100 points.

John MacPhee VK1KJM
36 Kavel Street, Torrens, ACT 2607

Overseas call areas, VK9 and VK0
Silver — 25 points
Gold — 50 points.
Bands above 52 MHz
Silver — 25 points
Gold — 50 points.

The VK1 Award net operates each Sunday evening, commencing immediately after the VK1 Divisional broadcast at approximately 1030 UTC on 3.570 MHz.

Applications for the VK1 Award should be addressed to: The Award Manager, PO Box E46, Queen Victoria Terrace, ACT 2600.

I hope that the preceding information is helpful and I want to thank Gavan VK1NEB for providing it.

Till next time

73 John VK1KJM

EDITOR AND PUBLIC RELATIONS OFFICER

AK



VK3 WIA NOTES

Jim Linton, VK3PC
DIVISIONAL PRESIDENT
VICTORIAN DIVISION

RADIO AMATEUR CLASSES FOR 1984

Want to become a radio amateur or upgrade your current licence?

Join the Wireless Institute Morse code and theory classes.

These are held one evening a week for six months ending in time for the DOC examinations.

Novice classes begin 22nd May.

AOCOP classes start 5th March and 20th August.

Also to help you prepare for the DOC exams there are special theory revision weekends on:

Novice — 5/6 May, 3/4 November.

AOCOP — 4/5 February, 4/5 August.

Inquiries: phone (03) 417 3535.

To enrol write:

Education Officer,
Wireless Institute,
412 Brunswick St,
Fitzroy, Vic 3065.

CAMPAIGN 3000

The hobby of amateur radio is something special to most radio amateurs — if you feel good about it go out of your way this year to encourage others to join our ranks. Any activity needs a constant input of new blood and amateur radio is no exception.

Just stop a moment and think about how you were attracted to the hobby — chances are it was through a friendly radio amateur, or perhaps something you read or heard somewhere about radio amateurs.

For anyone to be interested in amateur radio they have to first learn of its existence.

The Wireless Institute, Victorian Division, is doing all it can to publicise the hobby — but needs the help of individual members like yourself. Tell others what tremendous enjoyment, self-satisfaction and achievement you get out of our wonderful leisure activity.

To help you the WIA has produced an information leaflet entitled "Amateur Radio — The Hobby for Everyone" which is available free from the WIA Victorian Divisional Headquarters, all WIA Zones, and affiliated clubs.

This leaflet clearly sets out in plain language what our hobby is, how to go about becoming a radio amateur, DXing a worldwide fraternity, and the roles and aims of the Wireless Institute.

Get a few copies and help spread the word throughout Victoria about amateur radio — their usefulness in publicising the hobby is only limited by human imagination.

As a member of the WIA you are playing your part in protecting and insuring the future of amateur radio, not only in Australia but world wide. You already know about the advantages and benefits of being a member and how active VK3 is in Institute affairs. Help keep your Division at its record high membership level by joining a non-member during 1984 — and push the VK3 membership through the 3000 barrier.



Photo by Ken VK3AH

Jim VK3PC, Divisional President, presents WIA Membership Certificate to one of VK3's overseas members, Ruthanna WB3CQN whilst she was in Melbourne in December 1983.

CLASSES IN BALLARAT

The Ballarat Amateur Radio Group begins AOCOP classes this month and will hold them at the Ballarat North Technical School.

To enrol or make further inquiries contact Bill Johnson VK3DWJ QTHR.

AR



FIVE-EIGHTH WAVE

Jennifer Warrington, VK5ANW
59 Albert Street, Clarence Gardens, SA 5039

This is really a continuation of last months column on the PR opportunities we have had this year.

Earlier in the year we were advised that an article was being prepared for the Ansett airlines 'In Flight' magazine on Walter Burley-Griffen and as we use one of the Municipal Incinerators that he designed, as our headquarters building, we were asked to provide some information. David Clegg VK5AMK took and forwarded photographs of the building but unfortunately these were not used, although we did get a couple of mentions in the write-up. David did however have his hour of glory when the 'News', our afternoon newspaper, picked up the story and wanted to do their own version of it. He arranged to meet a journalist and photographer at the Burley Griffen Building, and subsequently a photograph of him 'photographing' from there appeared in the paper.

On the 4th, 5th and 6th November, David was again 'doing his bit' for the Division by organising our stand at the Electronics Expo at Morphettville Racecourse. This was a head-ache and a half as we were surrounded

by all the RF susceptible things you can imagine! HiFi equipment, VCRs, Electronic Organs, Computers, Video Games — the list goes on. We did have a few problems but fortunately a little co-operation by both parties, smoothed out most of these.

I never cease to be amazed at the interest a CW operator generates. Lindsay VK5GZ held his audiences enthralled on Friday and Saturday, and yet I bet not more than one in ten, if that, could read Morse. Visiting amateurs and those that we worked on 2 metres and 70 centimetres were more intrigued by the brand-new piece of Kenwood equipment that we had been lent by John Moffatt of ICS. Spanning the FM portions of these bands, your frequency is announced by a synthesised Japanese lady's voice! This will be a great asset to 'white stick' or mobile operations.

Once again, our thanks to all those who attended; also to those who gave us contacts; and especially to David who organised the whole thing and spent the best part of three days there.

AR

**A Call to all
holders of a**

NOVICE LICENCE

Now you have joined the ranks of Amateur Radio, why not extend your activities?

**THE WIRELESS INSTITUTE
OF AUSTRALIA
(N.S.W. DIVISION)**

conducts a Bridging Correspondence Course for the AOCOP and LAOCOP Examinations.

Throughout the Course, your papers are checked and commented upon to lead you to a **SUCCESSFUL CONCLUSION**.

For further details write to:
**THE COURSE SUPERVISOR,
W.I.A.**

P.O. BOX 1066,
PARRAMATTA, NSW 2150



WA BULLETIN

Fred Parsonage VK6PF
HONORARY SECRETARY
VK6 WIA DIVISION

NOTICE OF ANNUAL GENERAL MEETING

Notice is hereby given that the AGM of the Western Australian Division of the Wireless Institute of Australia will be held on Tuesday 24th April, 1984 at The Institute of Engineers, 712 Murray Street, West Perth on the conclusion of the General Meeting.

Business to be transacted will be:

Consideration of Council's Annual Report and Balance Sheet.

Elect of Office bearers vis:

- a. President
- b. Vice President
- c. Seven other Councillors.

Elect of two Auditors.

Appointment of a Patron.

General Business which has been duly notified.

Agenda items will be advised on the Divisional Broadcast on the three Sundays prior to the AGM.

Members unable to attend may appoint another member as their proxy in writing in the following form:

I member of the Institute hereby appoint Mr/Mrs/Ms also a member of the Institute to act for me as my proxy and in my name to do all things which I myself being present could do at the meeting of the Institute to be held at the Institute of Engineers, West Perth on the 24th April, 1984.

Signature

Witness

Date

RADIO RALLY 1983

Well, it's all over. For months the advertising went on with reference to RR and RR is coming and finally all knew that RR meant Radio Rally and it was to be held at the Parkerville Children's Home on the 20th November, 1983.

Saturday the 19th arrived after a week of very unseasonable inclement weather and it arrived with a typical West Australian spring day. This was the incentive for most of the people involved to start the trek to Parkerville and get the show organised for the following day. By mid afternoon there was quite a gathering with antenna being rigged, tables being set up, sites cornered and programmes arranged.

As the idea was to get the country members involved, accommodation and camp sites were available and already on the Saturday it looked as though a success was on hand with campervans and tents being set up and country amateurs were getting themselves known. This side of things continued throughout the evening and reports that a good mini-social took place.

By early Sunday morning, the locals knew something was on as their quiet country village became part of a motor rally with exhibitors and organisers making their way to the Rally. By this time, signs had been erected saving the tours of the countryside which were the highlight of the day before. Quickly

the site became organised and the commercial exhibitors set up their stands in the main hall. We were well supported and those exhibiting were Dick Smith with an excellent range of equipment, Rialto showing their illuminated globes, Tandy with a display based on their computers, Tri-Sales exhibiting amateur and CB gear and Willis Trading with a comprehensive showing of equipment. Also in the main hall was a display of old radios by the Wireless Hill Museum, a display of fast and slow scan TV and RTTY by the VHF Group, Perth Radio League with an excellent stand and the Institute book stall manned by one of our more attractive members, Christine.

Outside was the WICEN Group all set up in their Mobile Forwards Communication Centre, self contained with HF, VHF, auxiliary power and antennas. Further over was an excellent display of satellite communications which evoked considerable interest during the day. Unfortunately the passes were against us and a working demonstration was out of the question. Nearby was Gil VK6YL and her team who throughout the day ran one of the most popular events of the Rally, "Foxhunts". The team had during the previous weeks built and rebuilt some 60 sniffer and at all times of the day hoards of children and adults could be seen with the hand held yagis tally ho'ing. During the brief pauses Gil could be heard muttering "I need a better fox" and if no one got the message then the Rally committee will be in hiding before the next event!

Other attractions included the news broadcast being originated from VK6ZMG's car and was a very crowd attracting scene, I don't know whether the spectators were waiting for Douglas' car to finally fall to bits or for his finger to slip off the button of the tape recorder which had to be pressed down continuously — this whilst he was actuating another "hand held" device to override the repeater drop out — anyhow it all seemed to work.

The exhibition station consisted of an FT One kindly loaned by Dick Smith and attracted a steady stream of spectators throughout the day — unfortunately it didn't attract the conditions and contacts were very hard to come by.

Well, a Radio Rally or Mobile Rally or Hamfest, call it what you will, can have the greatest support by commercial houses, the participation of many groups and the benefit of many, many hours of work and all is wasted unless it is supported by the public and, supported it was, from the car park tallies and general counts, over 1000 people turned up and it wasn't long before the main hall was crowded, the foxhunts were under way, the various Groups were busily talking and the icecream van was doing business.

For many, of particular interest was the Swapmeet and a fair gathering of cars were parked in front of the main hall with their goodies spread out for the negotiations — if you wanted a spiral threaded bright emitter gas atomiser or a FT101E, the chances

were that it was there and from all appearances, someone else's junk is someone else's treasure and many a visitor was to be seen to be taking the long way around to their cars loaded with treasures whilst avoiding the XYL. Probably the winner was Alyn VK6ZGA who nearly couldn't avoid his XYL, she was the one nominated to ride home on the roofrack.

During the afternoon a presentation was made to the WICEN Group of a motor generator. This was donated by Hugh VK6FS who originally loaned it to the Heard Island DXpedition and on its return generously offered to WICEN.

This being the first rally of its kind sponsored by the West Australian Division, some things needed improvement and constructive criticism has been received together with a lot of words of appreciation. Yes, we will signpost the toilets next time, although why you didn't go before you left home I don't know!

Already we have been asked to make the rally an annual one or perhaps bi-annually. Well, this will certainly be considered early in the new year and a decision made, but rallies don't create themselves, they need people, people to work and organise. This rally was done on a limited budget and a very small sub-committee. Already we know that an event of this nature and size has to have more workers and more who are responsible for definite parts, perhaps you may like to register your name to be responsible for say the HF station or the foxhunts, if so drop a line now before any decision is made.

Credits are in order and it would be difficult to mention particular names among those who took an active part whether from the VHF Group manning 2 or 6 m stations, those of the CB fraternity who took an active part, those of the WICEN Group who were on demand all day or those like Phil VK6AAD who manned the VHF Group stand all day and who's feet must have noticed. But, there was a small sub-committee who saw the whole thing through from conception to end result and I know I have the backing of the other members of that sub-committee in saying that in practice the sub-committee was Chris Milne VK6AVX who organised it, babied it, coerced it and in the end physically built it. From all those who attended, thank you Chris.

AN

TASMANIAN NEWS



P Clark, VK7PC
DIVISIONAL SECRETARY
TASMANIA WIA DIVISION

The Annual General Meeting of the Tasmanian Division of the Wireless Institute of Australia will be held at the Penguin Town Hall on Saturday 12th March, 1984, starting 1 PM.



LETTERS TO THE EDITOR



THANK YOU AMATEUR RADIO OPERATORS:

The recent completion of my annual task of compiling the Australian National Report on the 26th Jamboree on the Air here in Australia, prompts me to offer a very sincere thanks to all those amateur radio operators, amongst whom there was a very worthwhile percentage of members of the Wireless Institute of Australia, who helped Australian Scouts and Guides enjoy such a successful Radio-Scouting activity as the 26th Jamboree on the Air.

In all the usual operating areas of Scout and Guide Dens, Camps, Rallies and Displays, and often in the homes of the amateurs themselves, we enjoyed an all-time Australian record participation and this will be seen in more detail in the copies of the Australian report forwarded to Federal and State Divisions of the Wireless Institute of Australia.

A record 16,075 Scouts and Leaders, and 7345 Guides and Leaders enjoyed Jamborees on the Air first hand at a total of 518 amateur operating stations! Enthusiastically also, some 4527 parents of the Scouts and Guides and other interested onlookers visited these points to observe at first hand how successfully amateur radio and Scouting and Guiding combined to share such an interesting activity. Only much good to both Scouting, Guiding and amateur radio can come from such a meeting and one can only wonder how many of these participants, like the writer, will in future be able to date their own introduction to the hobby of amateur radio from such a meeting!

1983 was also a record year for amateur radio operator involvement, with 749 operators helping the Scouts, and 211 assisting the Guides to make a total involvement of 960 amateur radio operators.

No doubt some small duplication of figures will be involved as some operating points were combined Scout/Guide activities. It was still a magnificent contribution by the amateur operators to the success of JOTA. Incidentally if you thought the QRM was heavy that weekend it may well have been due to the fact that a total of 8217 contacts were logged between Scouts and Guides in Australia, as well as overseas and the overseas complement represented approximately 22% of this figure.

So to all you magnificent people, whether you helped as operators, whether you took the time to spend a few moments talking to a Scout or Guide station, or whether you merely helped make a little more room on the bands for Scouts and Guides to enjoy the 26th Jamboree on the Air please accept the gratitude of Scouting and Guiding here in Australia, especially the 23,420 Scouts and Guides who renewed and made some lasting friendships during the weekend of 15/16th October, 1983.

Noel I Lynch (VK4BNL)
National Co-ordinator
— Jamborees on the Air
15 Moeline Street,
Dorrington, Qld 4060

AR

ADVERTISING

When the upsurge of CB began about six years ago in Australia the advertising of CB equipment was introduced into the WIA journal, Amateur Radio.

Protests were lodged with the WIA via the correspondence columns of AR. With one notable exception, CB ceased to be advertised in AR. Now, it seems another outbreak of CB adverts may be planned for AR.

I refer specifically to page 5 of September, 1983 Amateur Radio, where, in a full page advert by Radio World Pty Ltd prominently display a combined advert for CB radios — Marine Radios.

I cannot see and I vigorously object, that this merchandise should be so advertised in AR.

Reviewing the proposals made to the DOC in the intervening period, with regard to examination standards and regulatory matters, I find abundant evidence that the WIA has laid itself open to infiltration by persons whose objective is to penetrate the technical and operational standards of amateur radio. This may please radio retailers, but even now the status of amateur radio depends upon association with State Emergency Services and perhaps Coastal Surveillance organisations.

This is not the case in the USA where the amateur service and the ARRL are recognised as a responsible, self regulatory group of hobbyists, quite capable of initiating and implementing highly complex public service assistance and success in times of disaster. They do co-operate with Red Cross and state sponsored emergency services, of necessity, but they do not do so as dependents.

Therefore, I again urge the Federal Executive to be firm in their rejection of CB advertising.

The present unhappy yachting pirate situation is not exclusive to Australia, but, here again, AR continues to carry advertising of Marine Radio Sets. The Marine Radio has separate frequency allocations which are quite adequate, provided the operators make sensible use of them. I do not see any point in advertising Marine Radio in an amateur radio magazine. Amateur radio is a communications hobby and as such the introduction of material which is not of our hobby seems to me to be a waste of costly magazine space which, I, for one, object to.

Yours sincerely
George Harmer, VK4KXW
35 Rutland Street
Coorparoo, 4151

EDITOR'S NOTE:

Amateur Radio liaises with advertisers with regard to advertising.

Many amateurs are also active in other services in pursuit of their other interests and hobbies. The expansion and extension of Amateur Radio Service conditions and privileges is at the heart of WIA policy. The amateur service works closely with other services during civil emergencies within the framework of state and federal civil emergency organisations.

This letter has been shortened.

AR

EDUCATIONAL COMMENTS

I refer to "Education Notes" on page 69 of the December 1983 issue, in which the Federal Education Officer, Mrs Brenda Edmonds, comments on the Novice Instruction Kit distributed by the NSW Education Service of the WIA.

Concerning the "Learning Morse Code" component of the Novice Kit, she states: "I do not personally advocate the learning procedure recommended in the course. I uphold her right to make comment but I prefer to accept the estimations of

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.



many Novice — and ADCP — licensees who have written and indicated their satisfaction in on-air contacts after using the Morse Course with benefit. I point out that the Morse Course was introduced at a time when no suitable course was available on the market.

The Course Manual clearly states: "I do not claim that this is the best course that ever was!" Mrs Edmonds probably knows of some better course on the market. This one was written and distributed to meet a need at a particular time in amateur radio development and was based on very considerable experience in teaching (and testing) Morse Code in Army and Air Force and Amateur Radio Courses.

The Manual invites "comments and suggestions for improvements". To date, no such communication has been received from Mrs Edmonds — nor indeed from anyone. This "Education Notes" comment is the very first indication that the Course is "not up to scratch". So, if Mrs Edmonds has any valid suggestions for improvements, I shall be glad to consider them in the event of any revision of this Course.

Yours faithfully,
Rex Black, VK2YA
562 Kooringal Road
Wagga Wagga, 2650

Ed note: This letter has been considerably shortened.

AR

PRESS BUTTON GEAR CHANGE

An interesting and funny experience of combining amateur radio with motoring.

The writer recently took delivery of a small front wheel drive vehicle with an automatic gearbox. The vehicle is very small, so I decided to install a hand held 2 m rig, combined with a small line for 2 m mobile use. The quarter wave SS antenna was mounted on the cowling near the left hand side of the windscreen. When operating mobile, each time the press to talk button was pressed the car changed gears without moving any other object than the mike button. Investigations revealed that the gearbox Detent valve was being operated by RF energy. The solution was to move the antenna to the roof centre, having done this, the problem was solved.

Yours faithfully,
Warren H Cure, VK7KWC
15 Petchey Street
Bellerine, Tas. 7018

Ed note: EMC is with us as cars become more dependent on automotive electronics. All such instances should be widely publicised and brought to the attention of manufacturers, the EMC Coordinator, and other amateurs. Such instances could well result in significant safety hazards.

AR

SPECIAL PREFIX

Now that October is over and with it the month long use of the AX prefix in commemoration of the win of the America's Cup by Australia II, I wonder how many other amateurs experienced the same or similar happenings.

As I am led to believe, the special prefix is for local and DX work, but mainly DX, to give the overseas amateur opportunity to obtain a QSL card for the special occasion and thereby to fill his shoeboxes or whatever with more cards.

Not being a contest operator or an avid DX hound, I did not pursue the AX prefix either by transmitting or receiving.

However, on listening through the bands, as I am sure, most others do, I heard a station giving signa-

reports, and all other rigmarole, along with the AX prefix, then to my utter surprise, when being asked by the EA station for a card bearing the AX prefix from his state as he had not had one, was told by the VK (Pseudo AX) that he did not QSL.

This I believe, is not in the spirit of amateur radio. From that point on, I decided to check the frequencies, and see just who was a genuine AX station. Even on a request to the station holding the callback after the WIA broadcast on one Sunday morning, I was informed that, "If I got the cards printed for him, then he would send me a card." And this from a club station ...

To add further, on completion of October, I added up the amount of stations I had contacted who were using the AX prefix, and came up with a sum total of 27. Not many, you may say, but as I said, I am not an avid chaser, plus the fact that I have a fair amount of time on my hands to check propagation and so forth and can pick and choose operating times and bands.

Out of these 27 stations, I only received one, and I repeat one, reply for the return of a card bearing the elusive AX prefix. That was two weeks ago, and I sent my card direct the following day. To this day, I still have no AX card (8 November 1983).

My point in this letter is that, I think the people in charge of the allocation of special prefixes, should think twice before issuing the authority to use such short notice, and also as a reminder to all the stations that I heard using the special prefix, that it is there for a special occasion, to be used for QSL purposes and not as an ego booster, or for claiming a rare DX station. The situation is getting out of hand, and I think that most amateurs, if they sit back and think, will agree. Common sense should prevail ...

Thanking you,

L R Turner, VK3ALV

Box 56

Wedgeburn, Vic 3518

AR

PRESIDENT'S CHRISTMAS COMMENT DEC AR

Sorry to see such a one-eyed approach to the matter of MM nets by our Federal Executive. I would have thought some mention of an opposite viewpoint would have made a fairer presentation. So here is my viewpoint.

I would want to know more than vague generalities — for instance, just who are the "Queensland Yachtspersons" Bruce mentions?

No comment on the boycott issue. I just hope it is legal.

Since the WIA/NZART statement was published, I have only encountered one solitary pirate, while consistently acting as a relay station on two MM nets daily. My report to WIA, by certified mail covered the incident fully. DOC were also apprised of this incident. I have not heard of any follow up action from either quarter. I think I may have wasted my time and postage costs. I must say however, that DOC, Sydney were quick to act on a purloined VK2 callsign on one of these nets.

However, since that WIA/NZART statement, I have heard many pirates using foul language and resorting to inanities on the Sydney 2 metre repeaters. I presume that this is not considered an important item like the MM nets. I question our priorities here. Incidentally, my one MM pirate did not resort to foul language.

Right now, one well run MM net operates with a "monitor panel" who have direct contact with the FCC in the USA. This is the Pacific MM net. KH6HEO in Oahu is not control. The monitor panel is headed by N6QO who quickly checks all new check-ins for validity of call with the FCC. Net control is advised within a day or so of any illegal call, who is then politely, but firmly, declared "persona non grata". It is as simple as that. Why it works so well is that yachtsmen are a very close-knit fraternity and the shame of being banished publicly, while all are listening, is enormous. Whereas five years ago we had a lot of pirates, today there are few. This is the

result of a positive approach to what was formerly a serious problem.

Forgive me for generalising but I am told that of all those who studied for, and attempted, the AOC/P recently in Brisbane, by far the largest group were yachtsies. (This came from a Charter Yacht Master, who is also an amateur.) So now we propose alienating many potential WIA members.

What is "a useful amateur purpose"? Do any of the following serve such a purpose? Consider SSTV, ATV, RTTY, AMSAT, Moonbounce, DX Nets or just plain DXing. What about contests, which are my idea of avoidable, self-inflicted QRM? (But I do not object to others having their fun.) These are all branches of the one hobby. If you played bridge, it serves a "useful purpose" in keeping you occupied, alert and thinking. This is what amateur radio is about. We do not discriminate between someone who lives in a mansion, a flat or a caravan. Why then do we have to find some "useful amateur purpose" in amateur radio at sea. Well, how about safety at sea? Is it not perfect for this purpose. But in such usage, it sure beats the hell out of many other activities for a "useful" tag. Auckland Met office appreciates daily winds and weather from the ZL1ATE net. Honolulu Weather office use the same information from the Pacific MM net. This makes MM nets serve a pretty useful amateur service compared with most other facets of amateur radio.

Consider the practical possibilities emerging from the Christmas comment: 1. Just supposing we successfully effected a "shut down of MM nets, except in cases of emergency". How would we be aware that an emergency had arisen? 2. Even if all nets worldwide could be shut down, what do members think thousands of licensed (and pirate) yachts would do with their amateur rigs? They won't throw them overboard. They will use them, of course. They will set up their own nets. Net control will be anyone who has a weather-fax machine on board. There will be no monitoring of legal callsigns. A degree of band anarchy would doubtless ensue and we will have an action-replay of the 27 MHz scene of five years ago. I doubt if anyone wants that to occur. Make your thoughts known to your Federal Executive so they can represent us all — not just a small pressure group of three or four members.

Well run MM nets should remain as our defence against band anarchy and as a means of ensuring that as many as possible pirates are "sent to Coventry".

Right now the yachtsman has the choice of being legal or illegal. If the nets are closed, he is left with only one way to go. Is that what our Federal Executives want?

It is my humble opinion that to shut down responsible MM nets would be a surrender of a portion of our 20 metre band.

B I Henderson
7 The Glen
Beecroft 2119
AR

TWO METRES

No doubt this letter will raise a storm of contention among our elder amateurs but as we are in the age of fast developing electronics, computers and other where-with-all, it is time for respective developments also in the future amateur radio field.

Since becoming a novice and (in the main) a chosen listener on all bands, with a bit of DX for interest I have heard very little use of the 2 metre band by amateurs.

Being retired I am able to monitor all day and evenings and in this state, activity is apparent as soon as the worker leaves his home for his place of business and likewise when returning in the evening via his car with 2 metre rig installed.

Just now and then a foxhunting place and the band is subject to a little more usage.

My suggestion is that it appears that to create more interest in this band its use could be extended (on a limited basis) to those novices who have held their licences for a period of say three or four years

by which time their operations would be fluent enough to use this mode of communication.

Apart from the financial support to Repeater Groups the Novices enthusiasm could only improve the use of 2 metre facilities.

Admittedly an approach would have to be made to the DOC on this matter for approval to be granted to allow a special range of frequencies in this band, as with the 10, 15 and 20 metre bands for Novices but then again, how did we become Novices in the first instance if some full call had not suggested it?

Incidentally a novice of three to four years today, with the range of subjects for Full Call status, should not reflect the standard is slipping, but rather of a higher standard being required.

73s.

R A Davy VK3WHD
12 Lillian Street
Cottesloe, WA 6012

Ed note: Whilst attractive to many novices, extended band privileges for Novices require very careful consideration. Both policy and most importantly the scope of the Novice Theory examination are involved. Many candidates already find the Novice examination a significant test. The next step, the combined Limited and Novice, provides VHF privileges.

AR

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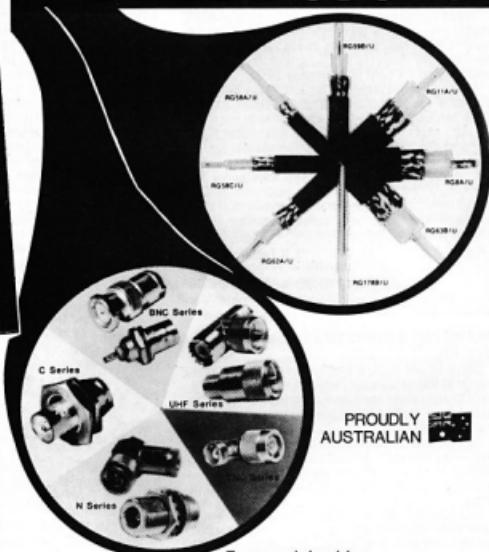
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Silent Keys

It is with deep regret we record the passing of —

RICHARD JOHN (Dick) SMITH
VK2AIU

Obituaries

AL SMYTHE

VK5MF

Al died suddenly on 19th November. He was licensed about 1933 as VK5MF, which callsign he held until the end.

He started his working life at National Radio, and in 1940 was appointed to the PMG's Department, where he remained until he retired.

Al was very active on all bands, and it was nothing for him to receive batches of 200 QSL cards at a time.

In 1945 Al served on the Institute's Experimental Advisory Committee, and in 1946-52 on the Technical Committee. He was one of the early experimenters with SSB and SSTV.

He was very enthusiastic in whatever he was doing, and devoted a lot of his retirement to the art of bonsai, on which he was quite an authority. He enjoyed working in the Telecom radio museum in Adelaide after his retirement, meeting friends and others also interested in radio.

He had had heart trouble for some time, and it disappointed him to have to miss the old timers' luncheon on 17th November, two days before he died.

Deepest sympathy is extended to Al's family.

Brian Austin VK5CA

AR

COMPS DAW

VK5EF

Comps died 22nd November, age 77.

In 1925 he wrote under the pen name of "Constructor" for the "SA Wireless Weekly" a series of articles, one of which was "A96 volt high tension accumulator". It was made up of forty eight test tubes, each with acid and two electrodes. Comps said his father had been rather annoyed when one broke and spilt onto the carpet.

During World War II he served as a Flight Lieutenant with the RAAF.

Comps was licensed for thirty five years as VK5EF, and in the late 1950's was Divisional Sub-Editor for three years, writing the notes for "AR". He was Vice President of VK5 Division in 1958, but resigned in 1961 due to the long trek to meetings from his home in Gawler.

In the early 1960's he was one of the earliest amateurs in Australia on SSB "making with the duck talk" as it was then known. His signals were known world-wide.

Comps had not been in the best of health even before his wife Trudy died five years ago. He was a quiet, meticulous person, intensely interested in anything new.

Comps was associated with Charlcks (grain merchants) throughout his working life, and in his retirement enjoyed model aeroplane building and amateur radio. He was disappointed to miss an old timers' luncheon in November, and on the day of his death intended purchasing a 2 metre handheld as he was delighted with its portability. His

last radio contact was the previous afternoon, when he demonstrated amateur radio to visitors. Deepest sympathy to Comp's family.

Brian Austin VK5CA

AR

MAURICE PAY

VK4MP

The Reverend Maurice Pay, BA, MA, BD, VK4MP, passed away on 1st October 1983.

Maurice gained his AOCP at the age of 43, and was issued with the call sign VK4MP. Having constructed his own Tx and Rx it was a great moment when a station returned to his first CQ.

Always keen on 'home brew' equipment he made many contacts in many countries as the walls of his shack testify. It was only in latter years that he was to use the FT200 presented to him by his wife Elise; and even then much of the associated equipment such as the ATU and Pan Adaptor was still 'home brew'. Able to speak authoritatively on a great many subjects he will be sadly missed on the amateur bands by those who knew him.

Ross VK4VL

AR

MURRAY ARTHUR CHAPLIN VK7CA

On 12th November 1983 Max, at 61 years, answered the CQ that closed his so active life, after several years of indifferent health which he never complained about.

In his early years he attended Gloucester State School, Newcastle C of E Grammar, finishing his education at Barker College, Hornsby NSW, coming to Tasmania at 17, he very quickly found employment with the then PMG Dept and Telecom, at the NBS Studios in Hobart, Stanley Radio, TNT Kelso, NBS Studios Launceston, and from 1963 was in charge of Telecom's microwave station in Launceston.

Retiring due to ill health in 1980, he was always very deeply involved with activities, his church, Retarded Children's and Self Help Association Committee, Lions Club, Trevallyn Bowls Club, IRE, WIA, SCOA, the Launceston Masonic Fraternity. His many close friends all extend their sympathy to his wife Pat, and family, Peter, John, Ann, Louise and son-in-law Craig.

Bill Tanner, VK7TE

AR

BOB SHEARER

ex-VK5AMS

In the 1970's, Bob realised that a knowledge of electronics would be beneficial to his position as Managing Director of John Shearer Ltd, so he started to tinker and he became so interested and absorbed in it that he decided to become a radio amateur and use it as a hobby in his retirement and thereby still increase his knowledge.

Bob was a very knowledgeable man and served on many committees and important boards. An honour was bestowed upon him in 1980 "The Order of Australia" for his service to the agricultural industry. He will be remembered by all that knew him as a friend and will be sadly missed by his wife, two sons, one daughter and nine grandchildren.

Jack Trembath

AR

IRIS CHANDLER

We regret the passing of Iris Chandler, wife of Alf, VK3LC, of whose continued and varied assistance to the WIA, notably and latterly as Region 3 Intruder Watch Co-ordinator, she was justly proud.

To Alf, we extend our sincere condolences.

Ivor Stafford, VK3XB

AR

Due to unforeseen circumstances there are no Ionospheric Predictions this month.

HAMADS

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.

- Please insert STD code with phone numbers when you advertise.
- Eight lines free to all WIA members. \$9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to P.O. Box 300, Caulfield South 3162.
- Repeats may be charged at full rates.
- QTH means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

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WANTED — QLD

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FT726 V/UHF ALL MODE TRIBANDER

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- 10 watt RF output on two metre (6 metre, 70 centimetre units optional)
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- Programmable limited band seen between memories
- Satellite I.F. unit (optional) for full duplex cross-band
- Squelch on all modes
- GaAs FET RX pre-amp in 70 centimetre unit



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(80C85)



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Stan Roberts
and Staff —
VK3BSR

ICOM's IC-02A

Digital Readout, Scanning, Memories and...



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for superior heat sinking when the IC-02A is run at the standard 3 watt level or 5 watts (optional battery pack).

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